

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, Editors.

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Just One Ton of Coal

ONE of the most sensitive parts of the human anatomy, it has recently been discovered, is the "pocketbook" nerve. Doctors of merchandising also have found that this nerve is closely connected with a section of the brain that may best be described in every-day words as "Caution and Suspicion of Seller." Although it usually is thought that coal is produced to burn, it really is produced to sell, and there is therefore some point in thinking of the relation of coal to the "pocketbook" nerve.

Dealing in meaningless but necessary averages we find that the per capita consumption of coal in the United States is about six tons per year, but that of the total, five tons, or 83 per cent, is used by railroads, public utilities and industry and that but one ton per person, on the average, is burned in the households of the nation. Now this average is more expressive than the usual statistical figure, for it is very nearly true. Nearly every person in the United States, especially the common folk who cannot winter at Palm Beach or Havana, depend on and use coal to keep warm. If to the household coal is added that used by public utilities for electric power and light and for gas, we have about one and one half tons per capita, or barely 25 per cent of the total coal consumed in this country, through which the public at large has its contact with the coal industry. Anthracite and bituminous coal share almost equally in this direct relationship to the public, with the distinction that business in domestic sizes is the major concern of the anthracite producers, representing 60 per cent of the total sales, whereas but 10 per cent of bituminous coal is sold for household use.

Instead, therefore, of thinking of the anthracite and the bituminous coal industries as separate and distinct, we may well divide along the line of contact with the ultimate consumer. The average person is the ultimate consumer of one ton of coal a year, and there is no way in which he can pass on any loaded cost. To him coal is a finished product, as are clothes and food. He comes in direct contact with coal in the purchase and use of that one ton of coal. The other five tons he is supposed to use each year touch his pocketbook no more directly than does structural steel, cement, lumber, or silver ore. There has been no popular demand for government control of the iron-ore mining industry, but regulation of the street railroads came to pass because a large portion of our citizens use the trolley cars. Coal for manufacturing and the railroads is a raw material.

If, for the sake of argument, we exclude labor as a commodity, it is easily possible to make a fine distinction between the ultimate and the intermediate consumers of coal. It is not so easy to separate the

problems of production and of marketing coal as it is to draw the line between these two classes of consumers, and this doubtless is the reason merchandising of coal has not been developed along this line. Because the public utility companies in their fight for higher rates have enlightened the public on the effect on their costs of high prices for coal, in other words have "passed the buck" to the coal producers, it is well to think of the coal used by the utilities as being in that portion of the whole coming in direct contact with the ultimate consumer. Without exception, then, every coal producing field in the country has this relationship to the public, and the operators in every field have a direct and selfish interest in having that relationship of proper character.

Let us consider first that one ton of coal. It would seem to be one of the fundamentals of merchandising—that much-mouthed word—that the producer and jobber should follow their product through to the consumer, setting standards for the guidance and control of the retail merchant in matters of quality, service and—within certain limits—of price. This has been and is being done with regard to large number of commodities and articles of every day and general use. It has been accomplished not by any process of holding a club over the retail merchant but through the use of a medium which as yet is as a closed book to the coal industry. One may easily call to mind any number of specific articles and commodities with regard to which the public has acquired a sensible understanding of the industry back of the product and a discriminating and exacting taste with respect to quality and service. The producers and distributors, and not the retail dealers, have brought this to pass. The message of the producer to the public has been carried direct, over the heads of the local merchant, and the public, thus educated, has forced the dealer into line.

The public knows altogether too little about that one ton of coal. What it knows is that it is too often adulterated, that it has cost more than it should have and that at times it has been almighty hard to get at any price. There is no escape from the necessity of buying that ton, and the public may therefore decide to establish, or attempt to establish, by legislation, the conditions of quality and price under which it will have its coal. Despite the fact that popular interest in five tons out of six is academic, any such legislation will affect the whole—no discrimination here is possible.

Consider that humble article of commerce, soap. There was a time when "Good morning; have you used Pears' soap?" represented the total popular knowledge of this article—now another says "It floats" and that it is "99.44 per cent pure." To popularize the phrase

"Good night; have you banked the furnace?" will not help the coal industry, but as a slogan, "It is clean and it burns" would meet with more popular approval.

The fellow who buys and burns this one ton we are discussing is well worth considering. It is he who—when his pocketbook nerve is touched by the price of coal plus slate—writes his Congressman and demands that something be done. Without a flood of such demands Congress is mightily slow to act.

Taxing Clean Coal

AN EVIL spirit must have possessed Representative Kohler when he presented a bill to the Pennsylvania Legislature providing "That laws may be enacted for the levying and collecting of a special tax on anthracite coal when prepared for market and an appropriation not exceeding the amount of the proceeds of such tax may be made by law for the relief of persons, corporations, associations and municipalities injured or damaged by surface subsidence resulting from past or future mining of anthracite coal."

It was an impression gained from the newspapers and from one's acquaintances that the country was up in arms against the amount of dirty coal sent to market. In fact during the war there were, if memory serves, campaigns for clean coal; bulletins were posted and inspectors were appointed, yet now clean coal is to be taxed and unprepared coal is to go free.

During the period referred to certain irresponsible persons put steam shovels into culm banks—the wastes from old washeries containing slate, coal rejected by reason of its impurity, and undersized coal—and shipped the material uncleaned to market. This coal under the proposed law would be free of a tax to which properly prepared fuel would be subject.

Rice and barley are quite generally shipped unwashed. Washing in the ordinary jig is impossible, in fact till quite recently there was no jig really suited to that work. But fine coal can and should be washed on either tables or special jigs, and as such cleaning involves throwing away a large percentage of impurity and a quantity of good coal too intimately associated with ash for separation, the work of cleaning coal needs encouragement and not suppression through the imposition of a tax.

What the author of the law obviously desired was that the impost be put on "prepared sizes"—that is, on those larger sizes which in the earlier days it was customary to screen and clean for the market. He has endeavored to avoid the use of this recognized market term and use one he believes is better but which is not. Had he required that all coal which passed over a screen of a certain size be taxed and all that went through such a screen be free from tax he would not have written a law which is so manifestly violative of the best interests of the public.

Anthracite Haulage Difficulties

LITTLE has been written about anthracite haulage problems, but that they are not unimportant is shown by the article by K. A. Meyer on the use of storage-battery locomotives in the Exeter colliery, appearing on page 667 in this issue. He records the work of five storage-battery locomotives which haul in the aggregate 153 mine cars per day, displacing thirty-nine mules. The work per locomotive is small in comparison with what is done in

bituminous mines by the same kind of equipment. The locomotives haul on an average, as may be readily ascertained from the figures given in the article, thirty-one cars per day.

The mules they displace would haul only four cars in eight hours, or one car every two hours. Of course, the mules are working in strings of three, so it would be more correct to say that a team of three mules hauls three cars every two hours, or one car every forty minutes. The wage cost must be high per car, as only six tons is obtained per day per man employed. The difficulties in anthracite mining are not appreciated till we realize that in this mine grades are encountered running between five and nine per cent.

The Jobbers' 1921 Platform

IN THIS issue (page 683) we publish a letter from George H. Cushing setting forth the "revised views of the wholesaling group" on Federal coal legislation. The letter is addressed to Senator Frelinghuysen, who is looked upon as the administration spokesman on coal, and who is expected to speak at the session of Congress opening this week. Until the jobbers, in annual convention assembled next June, have opportunity to accept or reject the position outlined by Mr. Cushing, their official spokesman, we may consider his statement the platform on governmental relations of this important section of the coal industry.

We are told that the wholesalers will not resist proper legislation designed to protect the public, provided the efficiency of the industry is not impaired and competition is unfettered; that they will not resist efforts to collect information about coal, provided the data are for the use of Congress, the legislative branch, or for the administrative branch of government (thereby excluding the judicial branch), and that these data shall be used in public way solely in the interest of the consumer. Objection is registered to any attempt to bring the fact gathering into one organization or bureau, as "that has a tendency to tempt such bureau or commission to try to make itself the leader or the regulator of the industry." Decentralization of fact gathering, to the end that the "impulse to paternalism be smothered," is indicated as the probable policy of the jobbers.

Such indeed is the present practice of the Federal government with respect to coal and all other industries. Some have mistakenly considered this as fostering duplication, and have indicated that in the extensive reorganization of the departments planned by this administration in the interests of economy and efficiency all activities relating to coal will be centralized.

Rearrangement of the bureaus at Washington so that every activity relating to coal would be under one head would have the eventual effect of increasing the cost of this work, rather than reducing it. Whether the work would be done more efficiently would depend entirely upon who had it in charge and would not follow from the change. Such a plan of organization would, as Mr. Cushing has stated, tempt the bureau having coal in charge to "try to make itself the leader or the regulator" of the industry. Whether such a course, in view of the lack of any national leadership within the industry, would inure to the disadvantage of the industry and the public is an open question. Again the character of the results would depend entirely on the man in charge of the bureau.

Reduces Losses in Output and Eliminates Fires From Overloads and "Shorts"

In Many Mines "Shorts" and Overloads Play Havoc With Production—An Installation of Automatic Circuit Breakers on Four Circuits Renders Loss of Operating Time From This Cause Negligible in Two Mines of the Ford Collieries Co.

By DONALD J. BAKER
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IN a previous article in *Coal Age* (issue of April 15, 1920) a few of the many reasons were set forth why the mines of the Ford Collieries Co., a subsidiary of the Michigan Alkali Co., aspired to, and finally attained, the lowest compensation rating granted to any coal operator in Pennsylvania. This concern, which is under the general managership of A. R. Pollock, mines about one and a half million tons of coal annually, and is, therefore, a sizable producer, although one that by no means can be ranked with the largest of the state. The low compensation rates granted to these plants well attest their efficient operation.

The knowledge this firm has gained concerning safe practices in the mines as well as accident prevention has been acquired in a remarkably short space of time. Tireless and conscientious effort has been expended on the fundamentals of safety, but the practices and results lie within the reach of all operators.

It is the purpose of this article to describe, without entering deeply into complex details, the electrification of the Berry No. 3 mine, where an electrical installation recently has been completed, which, while guaranteeing the men employed there increased security against fires and explosions, affords the company no reduction of its workmen's compensation insurance. A reward is obtained, however, through the better and more effective operation of the mine which the installation makes possible. Though the Berry No. 3 mine is chosen as the subject of this article, a similar installation has been made in Berry No. 1, which is somewhat smaller.

POWER OFF AN AVERAGE OF EIGHT TIMES DAILY

It has been estimated that where a mine has been equipped for distributing power by means of a single circuit, power trouble will put the entire works out of commission on an average eight times daily. These intervals of shutdown are caused by a drop in voltage and consequent overloading at some given point, or by an occasional "short." The time lost may easily total a half-hour of plant operation. Unless the motormen and machine men have been instructed to the contrary—and even then rules rarely are rigidly adhered to—they will await the return of power with the controllers on their machines advanced several notches, hoping thereby to take advantage of the first influx of returning energy. The loss of time in such cases, in all probability, will average more than has been stated.

Before power can be returned it will be necessary for the power-house attendant to close the circuit breaker. This can be accomplished permanently only after the removal of the cause of overload. If the line is still overloaded when the breaker is thrown in, this switch

will, of course, immediately fly out again. Under these conditions, the overload or peak is never removed from the wires for a period sufficiently long to permit the breaker to remain in a closed position and the circuit to be re-established.

MINE HALTS WHILE TROUBLE MEN HUNT CAUSE

After the switchboard attendant has thrown in the breaker, only to have it again fly out, say three or four times, "trouble shooters" are notified and an attempt is made to run down what appears to be a short-circuit. Unless all the butt entries are isolated from the main haulage roads by fused sectional switches the position of this electrical trouble can be located only indefinitely, causing a most expensive loss of operating time.

At an operation where the motor- and machine-men have been instructed not to follow the pernicious practice mentioned, a loss of only a half hour daily may be experienced, but such a mine is nevertheless admittedly far from efficient. At Berry No. 3 the loss of time mentioned meant the losing of nearly 160 tons of coal in the course of the day. Unquestionably this is an appreciable leak, although one often regarded as a necessary evil.

Installation of fused sectional switches—preferably placed at the entrance to each butt entry—will practically eliminate the possibility of the works being thrown out of operation through lack of power as the result of a short-circuit. These devices cut off current only in the working sections served by the particular butt entry in which they are installed. However, if the "short" is located along one of the main haulage roads and arises from a fall of roof or the like, the entire mine will be tied up. Though these switches are in a sense a protection against overloads, they are seldom called upon to function for that purpose, for, as a rule, an overload rarely manifests itself in a panel section.

ENTIRE NETWORK FEEDS TO POINT OF OVERLOAD

No. 3 mine is divided into four separate sections by the installation of eight automatic reclosing circuit breakers, and it is possible to isolate completely any section independent of any other in the event of an overload or short-circuit occurring upon one of them. This is accomplished automatically, yet the entire network of copper in all four sections feeds to the point of overload.

Thus one section is not called upon to perform heavy duty while light duty is demanded somewhere else, with no opportunity for the one to assist the other. The breakers have been installed so that any one circuit may be fed from two directions, thus giving two avenues

for energy delivery from any of the lines into a second at the first sign of an overload in that particular section.

If the current that rushes to the point of overload from all four circuits is not equal to the demand, three of the circuit breakers in the system will fly open, thereby eliminating the peak before damage can be done to a motor, an armature, a mining-machine cable, or whatever lies in the path of the current.

POWER IS RE-ESTABLISHED GRADUALLY

By means of an adjustable time-limit air valve any breaker may be set so as to reclose automatically after a predetermined interval of time. Upon installation each instrument is given a different adjustment from the others. This permits the circuit after being discontinued to be re-established gradually, and eliminates any excessive rush of power through the lines. When two or more sections of the mine are out of operation because of overloads—and this rarely occurs—the breakers at the shaft bottom, of which there are four, one for each circuit, reclose at varying time intervals and the generators in the power house can thus pick up their load gradually, giving a highly flexible return of power.

The Ford Collieries Co. generates the electrical energy for each of its three mines at separate power plants located at each operation. At present the generating equipment is being dismantled at the No. 1 mine, as in the near future power for this operation will be purchased. The power plants at the remaining two mines are quite complete, however, and it is doubtful if purchased energy will supplant that generated at these operations for some time to come. Three 200-kw., 250-volt machines are used to produce the current for the operation of No. 3 mine. The current is brought to the shaft bottom through a borehole by means of a 1,500,000 circ. mil. cable incased in conduit. The cable is then led to a brick chamber, where four 900-1,800 amp (adjustable between these limits) automatic reclosing circuit breakers have been installed. Four taps are taken off the line at this point, one lead going to each breaker.

ELIMINATES NEED OF BOOSTER EQUIPMENT

Except four other circuit breakers installed in the outskirts of the mine, the only electrical instruments in the entire operation are located in this room. The drop in line voltage has been so small that it has not been necessary to install booster equipment to re-energize the trolley wires at the far limits of the mine, although this action was deemed a necessity before the present equipment had been put in place. The four breakers in the substation are hung side by side on an insulated pipe rack. The lines from each pass through openings between the roof and walls of the room, thence to connect with the section lines that each is to serve.

Tie breakers are installed in four sections of the mine. The difference between the feeder breaker, which is the type placed at the bottom, and the tie breaker is shown in the accompanying wiring diagrams of these two devices. It will be noticed that the tie breaker is equipped with a double resistance, whereas that of the feeder breaker is single. By this means it is possible for the current to travel in either direction through the tie instrument, whereas there is but one course through the feeder breaker.

In the accompanying map of the mine the four circuits may be traced, each originating in the breaker room at the bottom. The circuit shown by the dashed

line runs northward in one of the north face entries, and has tributary to it the butt entries and panels of that section of the mine lying to the northwest of it.

The circuit shown by a dash-dot line runs northward up another of the north face entries and after traveling for a short distance along the main southeast haulage road supplies energy to the northeastern section of the mine. This circuit, which is the largest in the system, also delivers current to the dips or southeast butt entries. It is shown with a feeder line paralleling the trolley wire along the main haulway and into the most advanced east face entry. This feeder line is utilized for boosting the voltage in the active advanced panel sections, and is connected to the trolley wire at intervals of 250 ft.

The circuit shown by the dash-two-dot line runs directly into the central south face entry and feeds the butt entries on its left. This circuit is shown also with a feeder line. Development of the southeast and southwest sections of the mine is progressing at a more rapid rate than is that in the workings to the northward. Feeder lines are omitted along the north face-entry circuits, because from them less power is required. The company contemplates the sinking of another shaft to the northward some time in the future, through which will be taken much of the coal that could be removed through No. 3 shaft. This new operation will eliminate the long hauls which would be experienced if the coal lying directly to the northward were removed through Mine No. 3.

TIE BREAKERS INSTALLED IN END OF ENTRIES

The fourth circuit, shown by a dotted line, runs out the main northwest haulway and into one of the farthest advanced southwest face entries. This circuit supplies power to the butt entries to its left. It also is equipped with a feeder line.

It will be noticed that the tie breakers, designated by a circumscribed B, with one exception have been installed in the butt entries that are advanced farthest. It is considered advantageous to place them as near as possible to the power demand where the resistance of the wire is least. Any overload or "short" manifesting itself near the end of that circuit will have a correspondingly shorter distance to travel in registering at the breaker. Thus if a short occurs the power is immediately taken off the line, whereas if the current had some distance to traverse before reaching the breaker the resistance offered by the wire might prove to be so great that the line would grow hot and sag before the current was thrown off.

There would be danger that the mine would take fire if by chance a mine car happened to be beneath the wire when it sagged. Timbers also might easily be ignited. Each tie-breaker is mounted in a convenient cut-through on an ordinary pipe frame insulated and supported by heavy timbers reaching from roof to floor. This type of installation is both neat and substantial and requires no care of any kind.

SHORT CIRCUIT SHUTS CURRENT FROM LINE

Each circuit, although independent in itself, in the sense that trouble on one is not relayed to and reflected in another, is yet able to draw on all three for additional current. A sectionalizer is employed in connecting trolley wires of two circuits together so as to afford an even surface for movement of the trolley wheel of the locomotive. This is a small wooden plate about 1 ft. long which is fixed by bolt to each circuit dead end.

One of these is found in the butt entry near each tie breaker, as well as where each circuit joins another near the bottom.

Now let us see how the system operates. Suppose some section of the line feeding the farthestmost north-east and southeast butts is "shorted," this circuit being shown by the dashed-line. Immediately the tie-breakers B_c and B_b open, as well as the breaker at the bottom from which that circuit is controlled. There is no chance for any of the breakers mentioned to reclose, re-establishing the circuit, until the cause of the difficulty has been found and remedied.

Suppose instead, an overload occurs on this circuit at some point, caused, say, by a locomotive driver attempting to haul an unusually heavy trip up a steep grade. In such a case all the excess power available in the other three circuits rushes through different channels to this point. If the demand is still greater than can be accommodated by the amperage adjustment of each tie breaker, the three breakers mentioned will open.

After 5-, 10- and 15-sec. intervals each breaker recloses automatically and the circuit is again completed. If the overload still exists after these intervals of time, the breakers will not reclose but will remain open until the excessive load has been removed. Identically the same sequence of operations takes place under similar conditions in each of the other three circuits.

In the case of the north circuit the breaker at the

shaft bottom is not affected unless the cause of the trouble is located between the breaker room and tie breaker B_a . Otherwise only the breakers B_a and B_b will open. If an overload or "short" occurs on the west circuit, breaker B_d will open along with the proper section breaker at the shaft bottom. This section of the mine is isolated by only two breakers.

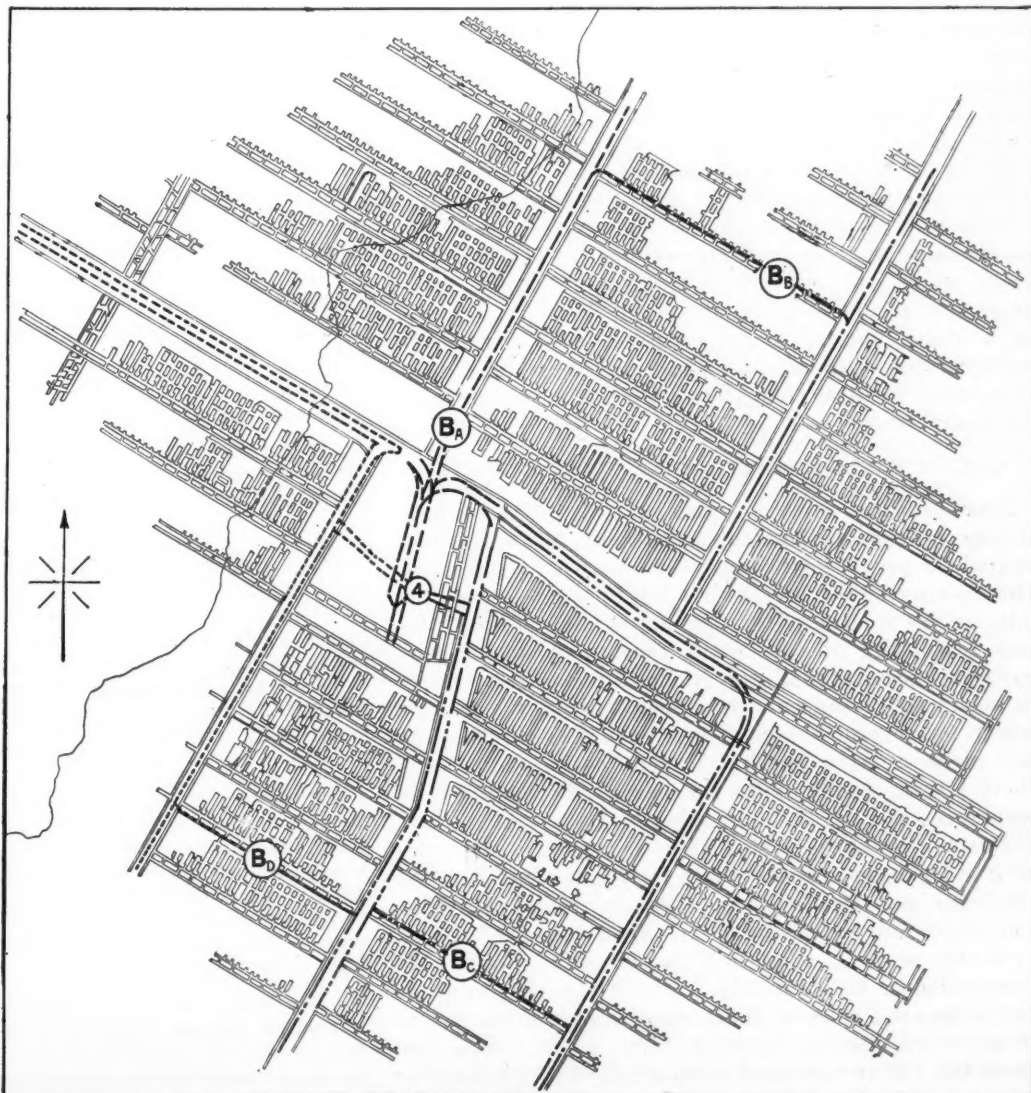
If there is trouble on the circuit illustrated by the dash-two-dot line, the tie breakers B_d and B_c will open; so also will the main feeder breaker for that line in the room at the bottom. During the time that any one circuit is down, the energy ordinarily flowing into its wires is directed into those of the three remaining closed circuits, if there is demand for it, making it less likely that an overload will manifest itself on any of these lines, unless, indeed, the current rating of the tie breaker is reached. This is adjustable between 600 and 1,200 amp. By following the course of the four main distributing lines, it can be seen clearly how each circuit can be fed from at least one other, thus making it possible for all of the copper in the mine to be of service in feeding current to any point.

"SHORT" IMMEDIATELY DEADENS ITS CIRCUIT

As has been mentioned, a fused sectional switch is located at the entrance to each butt entry, so that a "short" on any particular line will not be able to cause the de-energizing of the entire circuit.

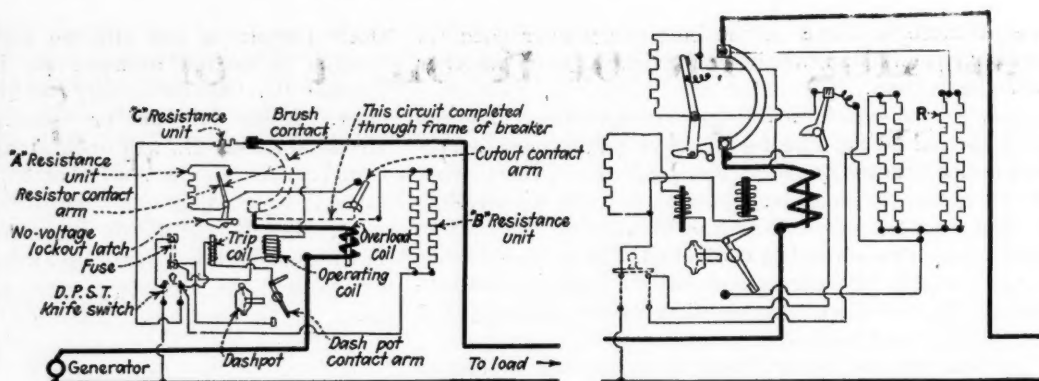
Berry No. 3 Mine, Showing Separate Wiring Circuits.

A diagrammatic plan of the mine with some of the headings and crosscuts omitted so as to make the trolley wires and feeders more readily apparent. B_a , B_b , B_c and B_d are four tie breakers through which the current can pass in either direction, thus making it possible to tie the various lines together so that in case of a heavy load on any one of them they can help one another. The trolley lines and feeders appear to be placed on different roadways, but they are not. The numeral 4 marks the substation at the foot of the shaft, where four feeder breakers are installed.



Feeder Breaker and Tie Breaker.

These instruments are quite similar, as their purposes differ but little. It will be noted that "B" resistance unit on the left is duplicated on the right as shown at R.



correctly speaking, that entry would be cut off from the circuit only until the cause of the difficulty had been removed and the switch re-fused. As there is but little likelihood of an overload coming on the wires in a butt entry, only in rare instances will anything other than a short-circuit isolate one of these panel arteries. When a "short" does occur, it may either be noticed by the men working in the rooms or by the locomotive driver when entering the butt. If it is discovered by the latter, the condition is reported, and a man is dispatched to run down the cause, remove it and renew the fuse.

Occasionally, a careless machineman will, by "goosing" his machine, bring about an overload within a room that cannot be handled by the 400-amp. fuse at the entrance to the butt entry. In such a case the fuse will part in much the same fashion that it would if a "short" existed. However, in the mines of the Ford company, overloads and burned-out fuses as a result of the practice above mentioned are uncommon.

The elasticity of the entire system is perhaps its greatest advantage. The time of the power-house attendant is not consumed in throwing in the circuit breaker as a result of overloads; therefore he can turn his attention to more profitable channels. The "shorts" which occur are limited in their field of activity to a single section of the mine, along one of the main haulage roads. "Shorts" in the rooms or butt entries are taken care of separately, as already has been described. Thus there is little time lost either in the mine or in the power house.

CIRCUIT BREAKERS LOCATED ON INTAKE AIRWAYS

Each breaker, being situated as it is in the intake airway of the farthest advanced butt entry, is well located for protecting the mine against fire or explosion. The opening of the breaker results in some arcing, but this is scant cause for an explosion. About the only possibility of this spark igniting a quantity of gas would occur should an overload on one of the circuits be set up after the mine had been down for a lack of power for several hours. The breakers in reclosing do not make a large spark. Under these conditions a short circuit would ignite the gas at the point of its occurrence and not at the breaker.

During the short period that the system above described has been in operation in the No. 3 mine, the time that has been lost because of power trouble has been reduced to a negligible quantity. Overloads are handled promptly as they arise and the circuits affected are re-established automatically. Under the old order of operation, the time of the power-house attendant was absorbed to a great extent in throwing in the section breakers. If he happened to be engaged in other duties

when a breaker opened, the mine was, of course, down until such time as he might happen to notice that this switch was disconnected.

PRESSURE DROP CUT FROM 100 TO 15 VOLTS

Before the new installation was effected, there had been a line drop between the power house and some of the innermost sections of the mine of over 100 volts. Now at no time is there a greater difference than 15 volts between these points. This fact in itself admirably illustrates the fact that all the current generated is now available for the supply of any portion of the underground workings. Two-, three-, and four-circuit systems have been installed in other operations, but these left much to be desired on account of the fact that much of the copper was limited in service to its own individual circuit. In these cases more generating equipment is needed for the operation of the mine than is actually required, and power costs soon rise to a figure that is exorbitant.

I wish to take this opportunity to thank W. G. Shallcross, general superintendent of the Ford Collieries Co., for the facts contained in this article. Without his kindly co-operation this description could not have been written. The officials of the Ford company are always willing to assist in the "passing along" of information in connection with the solution of operating problems. This characteristic trait of the firm is one of the many reasons why it has progressed further than most bituminous operators and today occupies an enviable position on the state's record. It is only through all concerns making an open book of what each has learned that the entire industry can make rapid progress.

WHEN NEGRO MINERS ATTEMPTED to go to work at the Key coal mine in Warrick County, Indiana, they were stopped by white pickets and a fight ensued. The negroes found out that the white workers had attended a union meeting the day before, March 21, and called a strike. About eighty men work at the mine and the officials of the union have been asked to settle the strike. Meantime the Sheriff has gathered in those who took part in the fight.

SHIPMENTS OF COAL AND COKE through the Panama Canal during January were as follows: South Atlantic ports to Chile, 24,809 tons; South Atlantic ports to Peru, 4,773 tons; South Atlantic ports to New Zealand, 21,214 tons; South Atlantic ports to Balboa, 11,998 tons; North Atlantic ports to Ecuador, 3,300 tons; North Atlantic ports to Chile, 41,216 tons; North Atlantic ports to Far East, 1,100 tons; British Isles to Peru, 1,711 tons.

ARGENTINE COAL IMPORTS in 1920 were chiefly from the United States. Reports received show that this country furnished seven times more coal than Great Britain.

Making Side of Room a Working Face, Thus Combining Room-and-Pillar With Longwall

Heading Machines, Mechanical Loaders and Undercutters Used—Narrow Rooms in Pairs Are Driven Up Full Length, and Pillars Left Between Adjacent Pairs Are Then Extracted by Slabbing Them With a Coal Cutter—Favored as Method of Storing Coal

BY CARL SCHOLZ*
Charleston, W. Va.

OBJECTION to the room-and-pillar method for the mechanical extraction of coal, especially in relatively shallow workings, is based mainly on the fact that the working face of the room and later of the pillar is too small. Any machinery, therefore, that is installed consumes valuable time getting into action, and, in going from one small face to another, cumbers the roadways which should be kept busy transporting coal. The time of an expensive machine is about twice as valuable as is that of a man. The combined interest, depreciation and obsolescence charges of 12 per cent for a \$20,000 machine amount to about \$1 an hour, or \$8 per day, even assuming a 300-day year.

These facts have militated greatly against the use of cutting and loading machinery, especially in view of the fact that few machines will do all the work that is needed. Some cut the coal, others drill it and still others load it. The more machines that are employed, the more there is to interfere with the delivery of the cars to the working place and yet the greater the need to make their visits frequent and unimpeded.

In consequence, it has been frankly conceded by mine managers that in order to obtain the best results a rearrangement of the working faces must be made such as will suit the capabilities of the various machines, keep them steadily on the job and aid the rapid and ready distribution of mine cars. The capabilities of machines have to be studied, and the lines of the mine and the methods of extraction suited to them.

MINE OPENED BY HEADING MACHINE

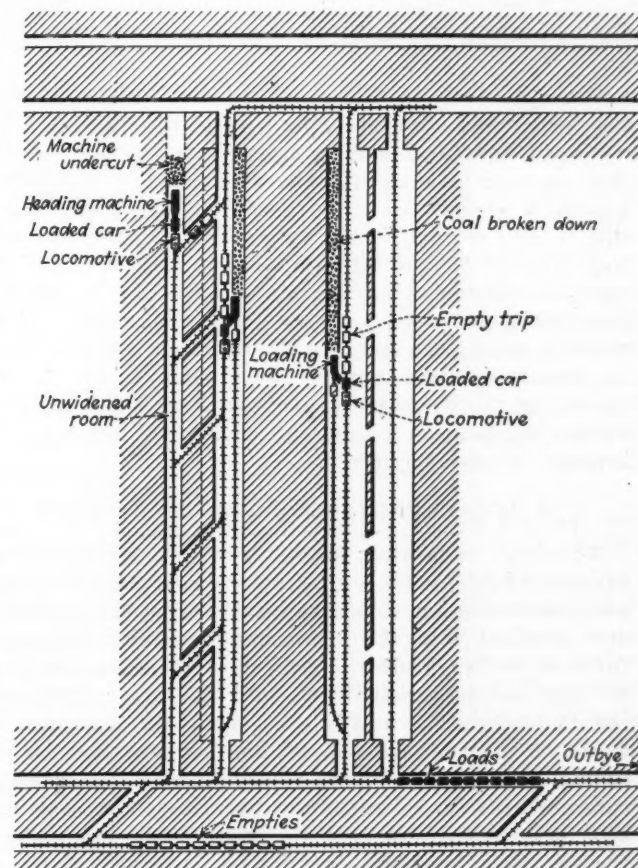
For the plan outlined in this article I have made application for letters patent. It involves the use, as shown in Fig. 1, of pairs of rooms with ribs between them of such a thickness that when a slab cut is taken from both sides they will be almost cut through. The pillars between the pairs will be much larger, to permit of their extraction. It is planned to make the rooms preferably 12 ft. wide and 500 ft. long. They will be rapidly driven by a heading machine which will load cars on the track in its rear. This machine, as it travels continuously forward, does not interfere with travel along the roadways, though it labors under the difficulty that only one car can be placed at a time.

As soon as either one of the rooms in any given pair is driven up, a slab will be taken off the entire length of the big pillar and this coal will be loaded out, preferably with a mechanical loader. Shoulders, however, will be left at each entry, thus providing for room necks. As soon as both rooms in the pair are up

the required length slabs will be taken off on either side of the small pillar between them, thus reducing it in size.

Thereafter, if roof conditions permit, successive slabs will be taken off the big pillar on both sides of it till the whole of it or as much as possible has been extracted. However, in the present operation this slabbing will be deferred until the upper beds are worked out. The large pillars can be recovered, if necessary, by another pair of 12-ft. entries with slabs taken off both sides, as in the original operation, the thickness of the pillars being planned to suit this condition.

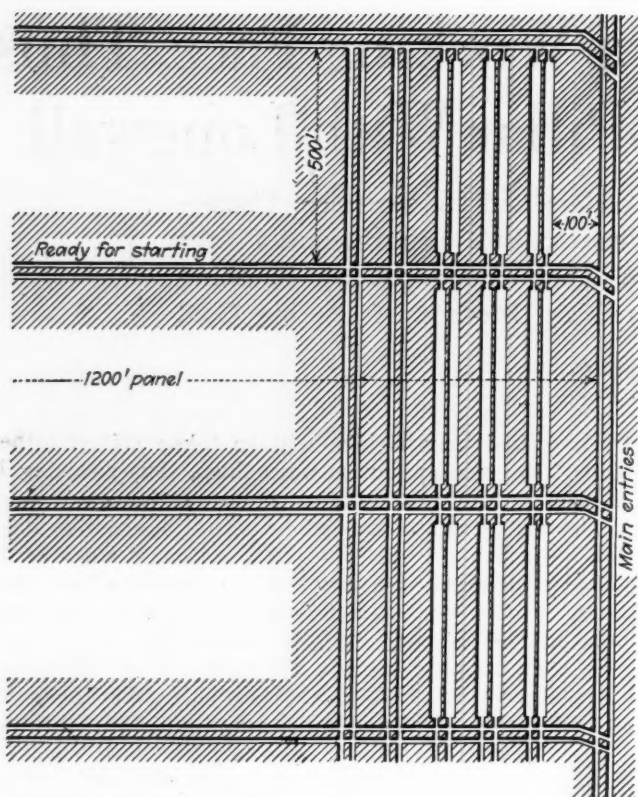
In each room two tracks will be maintained, one for the mine cars which will be arranged alongside the broken-down coal, and one close up against the un-



PLAN TO MINE COAL ON A WHOLESALE SCALE

Hitherto we have brought one car at a time to the loader, mechanical or human. This scheme is planned so that cars may be brought in trips to the working face. If need be the cars can be made to move continuously past the loading points. Some such plan which will provide facilities of this kind will have to be devised if coal is to be loaded cheaply.

*Vice-president and general manager, Raleigh-Wyoming Coal Co.



FLANKS OF NARROW ROOMS USED AS WORKING FACES

Pairs of rooms are driven up, one room serving to ventilate its neighbor. Then the pillar between the rooms is reduced by slabbing and later still slabs are taken off the large pillar left between the room pairs.

broken coal face. On this latter track will travel the coal loader and later the undercutting machine.

It will be noted that with this arrangement more than one car can be brought at a time to a loader. Indeed, a whole train of cars will be pulled up alongside it, and in fact it will be possible to have another trip come in behind the first and so keep the loading machine continuously working. Continuity in operation is the great need of the loading machine. If a machine loader can have no more than a miner's turn of cars, one might as well not install it, for it requires as much or more attention, consumes power, suffers depreciation and obsolescence, needs repairs and involves interest payments.

CAR ALWAYS PRESENTED RIGHT END FORWARD

The cars for heading machines are brought into the panel through one entry of a double heading, are backswitched through a shoofly and, still traveling backward, are switched into the room and presented end-gate forward to the loading conveyor. On being brought out the car is backswitched into the other entry of the double heading, and in consequence the end-gate is again at the forward end of the car, but this is, of course, unimportant where rotary dumps and gateless cars are used, as is becoming increasingly the practice. It will be noted also that if the cars are brought in for the other machine—that which loads off the rib—they may approach the working place by either pair of entries and will in either event leave the mine with the end-gate of the car outbye and therefore ready for dumping when the surface is reached.

An important advantage of the scheme here outlined is the ability to drive a large amount of development

with a minimum production of coal, a condition well suited to the present market demand. The unmined but developed coal is thus "stored" inside the mine and can be quickly loaded out. In fact, the condition is similar to that in a strip pit after the surface is removed. The coal is ready to be loaded out at any time. A shortwall machine will slab one of the 450-ft. faces in three or four hours and the coal thus dislodged can be loaded in three or four days.

EACH PLACE WILL PRODUCE 200 TONS PER DAY

With a seam about 6 ft. thick a cut along the full 450-ft. face would give about 600 tons of coal. Thus each room would give from 150 to 200 tons per day. It is easy to see how concentrated would be the operation under those circumstances. Only a small area would need to be developed at any time to afford an immense daily tonnage. The concentration would save in the use of air, would reduce superintendence cost and would make it possible to lessen the amount of rails and timber used in the roadways, at the same time giving the mining and loading machines unequalled opportunity and producing, by reason of the long faces, an unusual percentage of coal of large size.

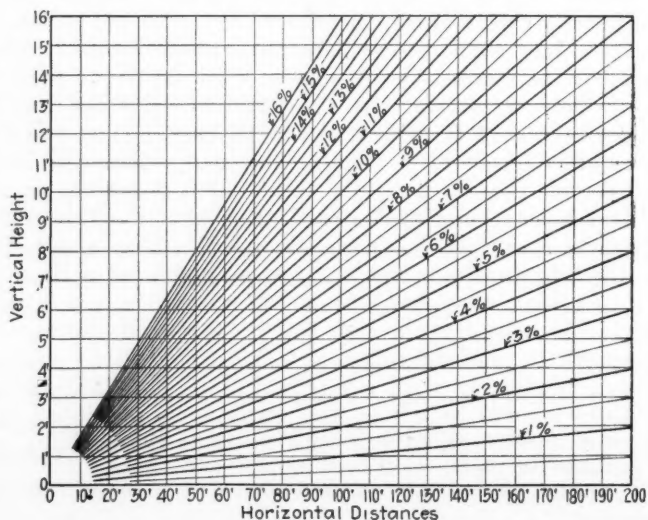
It may be found desirable in some instances to make the large pillars some 200, 300 or 400 ft. wide and to work them continuously only in one direction, thereby giving opportunity for the roof to cave behind the working roads, thus relieving the weight and reducing the loss of coal. The width of the pillars and the sizes of the roadways and undercuts are, of course, not essential elements of the plan.

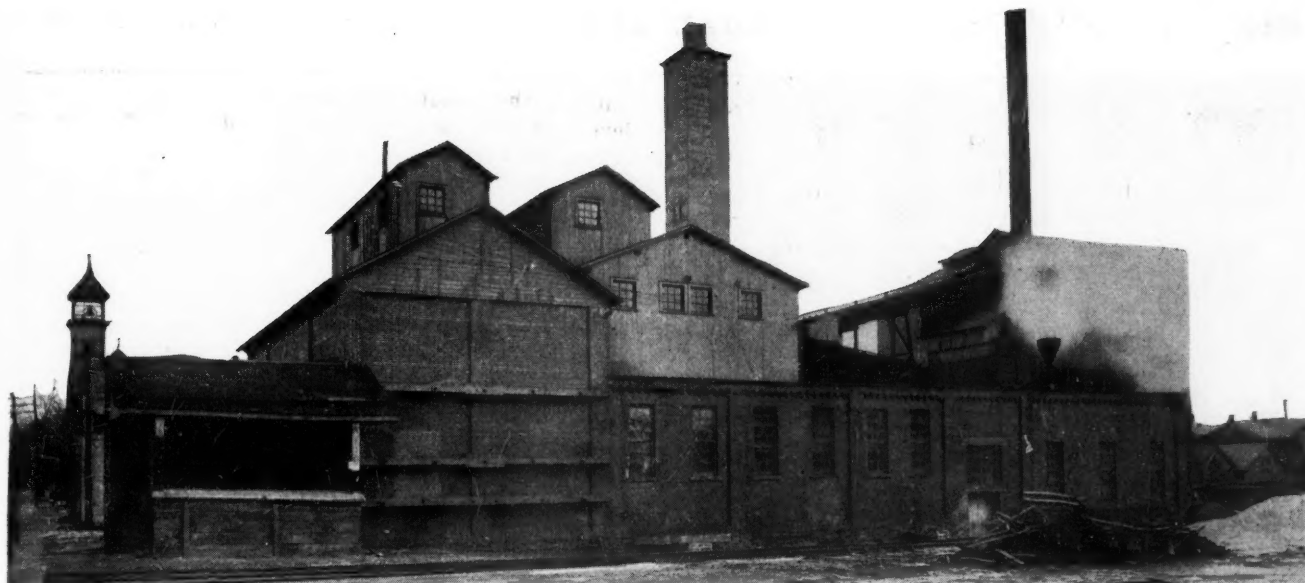
Chart Speeds Interpolation of Contours

BY S. G. HAVERSTICK
Frostburg, Md.

CONTOURS may be accurately interpolated by the use of the accompanying chart. Here vertical distances are shown along the left side, horizontal distances along the bottom line and grades along the right margin and top.

Suppose the draftsman desired to find the horizontal distance from elevation 1066.4 to contour 1070 on a 6 per cent grade. The difference in elevations in this case is 3.6 ft. In solving the problem follow the 6 per cent grade line to its intersection with the horizontal line marked 3.6 ft. at the left margin, then follow the vertical line from this junction to the lower margin and read the horizontal distance, which in this case is 60 ft.





ANTHRACITE SMOKELESS BRIQUET CO.'S PLANT AT SUNBURY, PA.

Factors To Be Borne in Mind in Making Briquets of Fine Materials

Coal Briquets Need an Artificial Binder—Sulphite-Liquor Briquets After They Are Made Must Be Treated to Render Them Waterproof—Peat Briquets Should Receive Heavy Pressure—Carbonization of Lignites Before Briquetting Recommended—Breeze Should Be Mixed with Coal to Lessen Abrasion

BY J. E. STEVENS
New York City

THE science of briquetting and the processes therein involved are little known in this country outside of a comparatively small group of engineers and manufacturers directly connected with the industry, either as makers of equipment or operators of briquetting plants.

The word "briquet" itself often is a source of mystery to otherwise well-informed persons. While "to briquet" is defined in the dictionaries as "to compress minerals or mineral dust into bricks by pressure, heat and binding material," a more explicit definition has been given. This states that whereas a brick is made with a view to its perpetuation and continued use in that form, a briquet is "a block of compressed material molded into a certain shape, whose conformation is invariably destroyed when the briquet is used."

Briquetting is essentially connected with the utilization of waste materials. It is not specifically the reclamation of otherwise absolute waste, but rather the constitution of low-grade materials into such form that when used they will yield results equal to, or at least comparable with, those obtained from higher grades. As the problem of utilizing waste has been brought into prominence during recent years, the briquetting industry has received appreciable impetus and now finds application in many fields.

Briquets may be divided into two main divisions: First, those that are totally destroyed when used, this class being composed mainly of fuels, and second, those briquets made up for the most part of metallurgical materials that are to be smelted for the recovery of

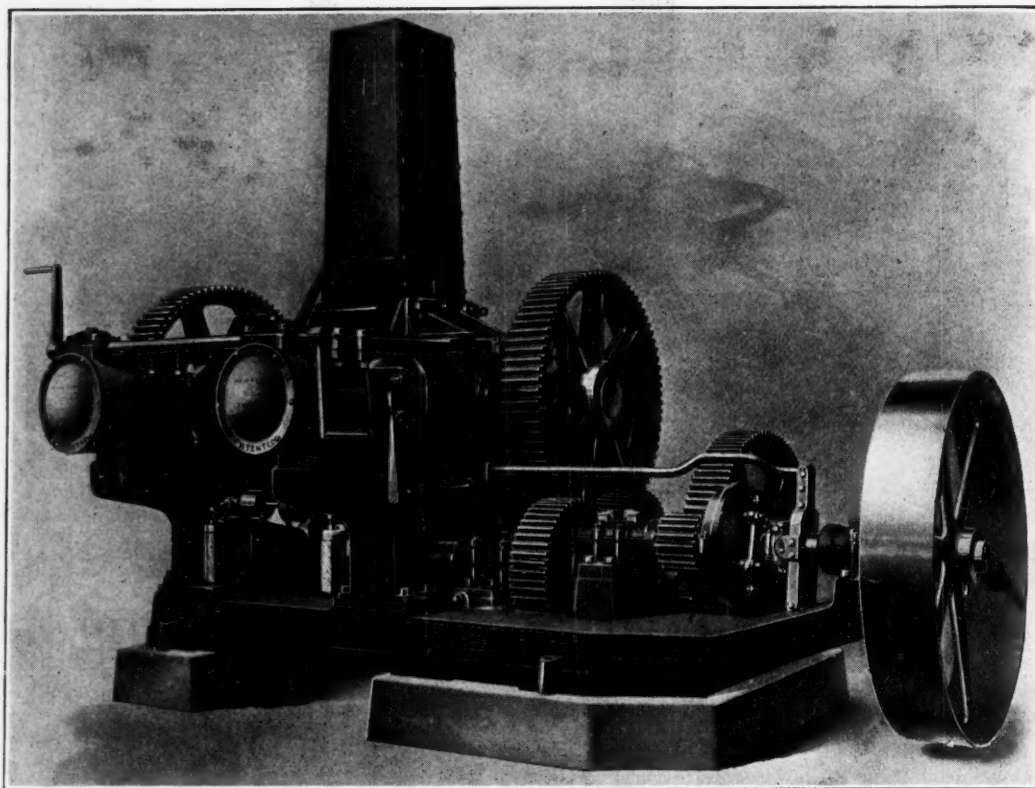
metals. This class includes various kinds of ore fines and flue dusts, as well as metal turnings, borings, filings, chips and the like.

TEN FORMS OF FUEL HAVE BEEN BRIQUETTED

The fuels making up the first division include the common grades of coal—anthracite, bituminous and lignite—also less valuable fuel materials, such as coke breeze, peat and sawdust. In countries where coal is scarce and other materials are plentiful, attempts have been made also to briquet for fuel purposes such substances as rice husks, bagasse, cottonseed waste and coconut husks.

By far the greater proportion of fuel briquets made in this country are composed of anthracite fines—either the screenings from lump coal or culm from the washeries. Vast accumulations of this latter material are available throughout the mining regions. In the briquetting of coal some form of binding material almost invariably must be used to cement the particles together. The selection of a suitable binder is an important factor in any briquetting proposition.

Numerous substances are available that will act successfully as binding agents. By their use excellent briquets can be made in the laboratory or in comparatively small quantities. Numerous patents have been taken out for the manufacture of briquets during the last twenty years and every possible material or combination of materials has been suggested as an agglomerant to bind small particles of coal together. Binders which have proved to be suitable for the manu-



Briquet Press

As it appears with gear cases removed. This Mashek press makes twenty tons of briquets per hour; each briquet weighing 2½ oz. It may be observed that the machine is provided with a clutch on the belt shaft and that the ratio of back gearing is high, giving a heavy pressure upon the briquet with a comparatively light belt pull.

facture of fuel briquets on a commercial scale, however, are extremely few.

Coal-tar pitch, which is a residual product from the distillation of coal tar, is used to a great extent in Europe, probably 90 per cent of the world's production of fuel briquets being made with this material. In this country, however, owing to our large oil supplies, the pitch or residuum from petroleum refineries can be obtained at a cost comparable with that of coal-tar residues and it possesses certain advantages over such materials in the production of fuel briquets. This material is, therefore, now being extensively used for this purpose.

COAL-TAR PITCH VERSUS SULPHITE LIQUOR

Several attempts have been made to commercialize the use of sulphite liquor (a waste product from paper mills) as a binder. While excellent briquets can be made with this material it has the disadvantage of being soluble in water, and therefore, in order to make the briquets so produced waterproof, it is necessary to subject them to special treatment after molding. This additional operation usually takes the form of baking in order to carbonize the binder. Up to the present time the cost of waterproofing has more than offset any savings effected by low cost of binding material.

However, the question of what agglomerant is to be employed should be decided according to the location of the plant and the materials most readily available. Each briquetting proposition, therefore, must be considered entirely on its own merits. Many attempts have been made to briquet coal without binder. Some bituminous coals, of course, already contain a certain percentage of tar and can be briquetted by a combination of heat and pressure without additional binder. So far, however, such methods have not been applied on a commercial scale.

Briquetting of peat can be accomplished without binder, but in order to produce a good, hard, dense

briquet, extreme measures must be employed. As the heating value of peat is 40 per cent less than that of an equal weight of coal, it is highly desirable that the briquet should be as dense as possible.

The briquetting of peat as a commercial proposition offers an entirely different and much more difficult problem than that encountered with coal. Peat as obtained from the bog usually contains from 80 to 90 per cent moisture, and the reduction of this amount to the 10 to 15 per cent maximum allowable in briquets adds greatly to the cost of production. Under the European wet carbonizing process of peat fuel manufacture the peat contains less than 3 per cent of moisture when briquetted, the resultant fuel being extremely hard and dense, with a smooth, shiny surface.

There is no doubt that under present conditions a ready market can be found for peat fuel in some regions, but the question as to whether this peat should be marketed in blocks, as cut from the bog and subsequently dried, or should be manufactured and sold as briquets will depend upon the formation of the peat available and upon local marketing conditions.

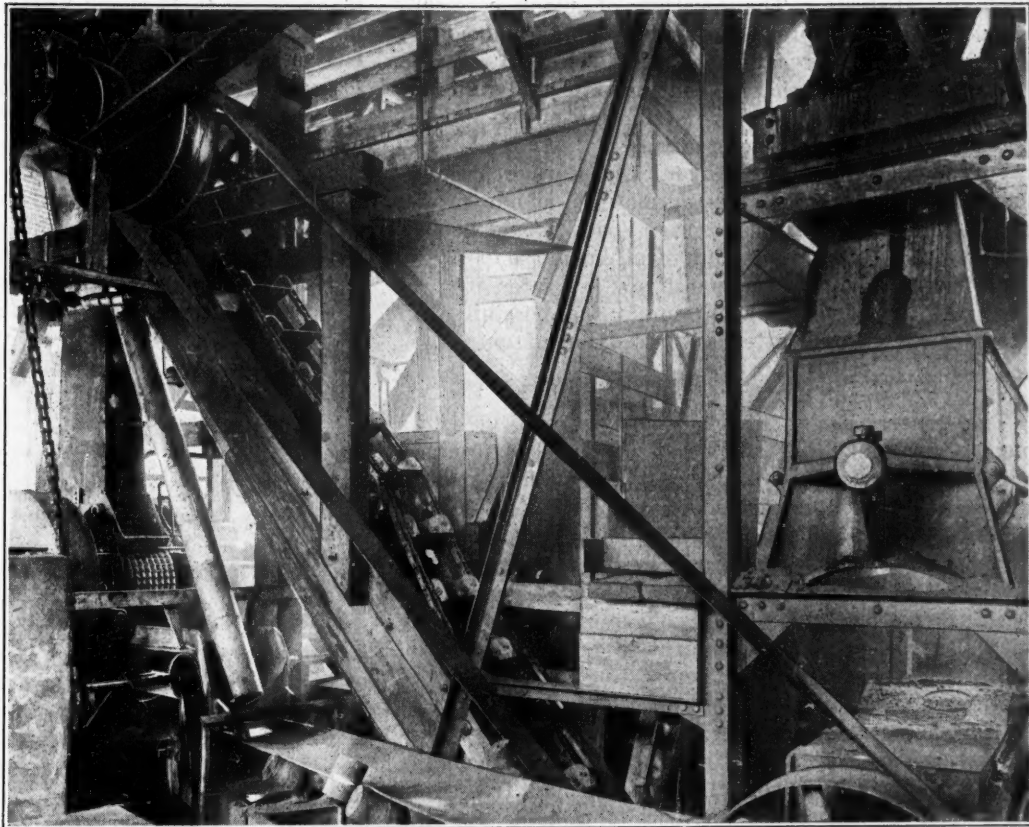
Lignites can be briquetted in the raw state by using a fairly high percentage of binder, but, after much experimentation and research work, it has been found that the utilization of this class of coals can best be accomplished by first carbonizing them and extracting the byproducts and then briquetting the carbonized residue. An excellent smokeless fuel, similar in many respects to anthracite, is thus obtained. Charcoal from wood-distillation plants also is being briquetted, using the waste wood tar as a binder. The resulting briquets are used in the manufacture of charcoal iron.

MIX COAL WITH BREEZE TO LESSEN ABRASION

Coke breeze from gas works is often produced in larger quantities than can be easily disposed of and under certain conditions can be profitably briquetted and sold as domestic fuel. This material, however,

Interior of Briquet Mill

On the right can be seen the mixers, which make a uniform mix of the coal and binder. On the left is the briquet press with its revolving wheel studded with depressions in which the mix is fed and thereafter pressed into shape. Conveyors bring the material to be shaped from the bottom of the mixer and dump it into the top of the vertical steel chute above the press.



owing to its abrasive action on the machinery and equipment, offers certain mechanical difficulties in briquetting which if not overcome increase the cost of production to such an extent as to make the proposition unprofitable. By mixing the breeze with, say, 25 per cent of bituminous coal and thoroughly grinding the mixture before briquetting, the abrasive action can be reduced to a minimum.

Briquetting is being especially applied in the low-temperature carbonization process now rapidly being developed. The purpose of this process is to obtain a maximum yield of tar products from coal and at the same time to provide a good dense fuel suitable for domestic use. Under the Marshall-Tozer process of low-temperature carbonization the coke fines resulting from retorting are manufactured into briquets, and in the Smith method the coke dust is briquetted preliminary to the second stage of the carbonization process.

One of the efforts made to assist in meeting the

fuel shortage has resulted in briquets being made from dried garbage and street sweepings mixed with coal. The garbage is first pulped and macerated, then dried. An equal weight of coal is then added and after thorough mixing the resulting mass is molded into briquets, the garbage acting as a binder to the coal dust. While the heating value of the garbage is low, it acts as a satisfactory filler. This method of utilization effectually overcomes the problem of disposing of city refuse.

There is no doubt that from the present time on the utilization of fuel materials which in the past have been considered of no value will receive much greater attention. Where an adequate supply of coal fines and binder can be obtained at reasonable prices and a near-by market exists for the product, the fuel-briquetting field offers favorable inducement for the investment of capital and will produce excellent returns.

In order to insure success, however, any fuel-briquetting proposition should receive complete pre-



ANTHRACITE CULM BANK NEAR SCRANTON, PA.

The many mountains of fine coal around the anthracite region await some form of disposal, briquetting being one of the most successful. Large quantities of still finer culm that will not settle is constantly traveling away in the black floods from the washers. Some day it will be freed by the use of thickeners and filters and will then be available for the briquetting process.

liminary analysis. The location of plant especially should be given thorough consideration. It should be examined from every angle before a selection is made. It is obvious also that a continuous supply of raw materials and facilities for distribution of the finished product are absolutely necessary.

In the matter of plant layout the storage arrangements for both raw and finished material should receive careful attention. Ample storage space should be provided, while the handling equipment should be of liberal capacity, necessitating comparatively low rates of speed in order to reduce to a minimum the possibility of break-down with its attendant reduction of output.

COST OF BRIQUETTING MUST BE KEPT LOW

The general design of plant and mechanical equipment should take full advantage of previous practice, avoiding the mistakes of the past and following along those lines which experience has proved to be most effective. No complicated or costly machinery is necessary under ordinary circumstances, as the processes involved are comparatively simple. The endeavor should be to provide machinery of ample strength and capacity with all items of plant equipment in correct proportion and so co-ordinated that continuous and low cost of production can be obtained.

In successful briquetting, as in any other waste-utilization project, it is highly essential that the mechanical processes should be simple and free from costly complications, as the price obtainable for the finished product always is limited by that of the higher grades of materials from which the briquets are made.

The second class of briquets, those that are not absolutely destroyed when used, but which are smelted for the recovery of metals, are mostly made up of ore fines and flue dusts. Scrap metal turnings and borings also are being briquetted in large quantities. The utilization of ore fines had not, prior to ten or fifteen years ago, occupied the attention of those interested in the

management of smelting works. Owing to the increasing difficulty of obtaining supplies, however, attention has been turned to the utilization of the finer ores and to converting them into a condition suitable for the blast furnace. This can be accomplished efficiently by briquetting, and various processes are now used in the conversion of the fine ores into this form. Some of these use organic binders such as pitch and tar while others agglomerate the fines with lime. Still another process uses no binding agent, the ore being fritted by heat until the particles soften and agglutinate.

Briquetting, therefore, is the science of forming small granular materials into larger lumps by compression. In some cases a binding material is employed with or without the application of heat, in others reliance is placed upon pressure alone.

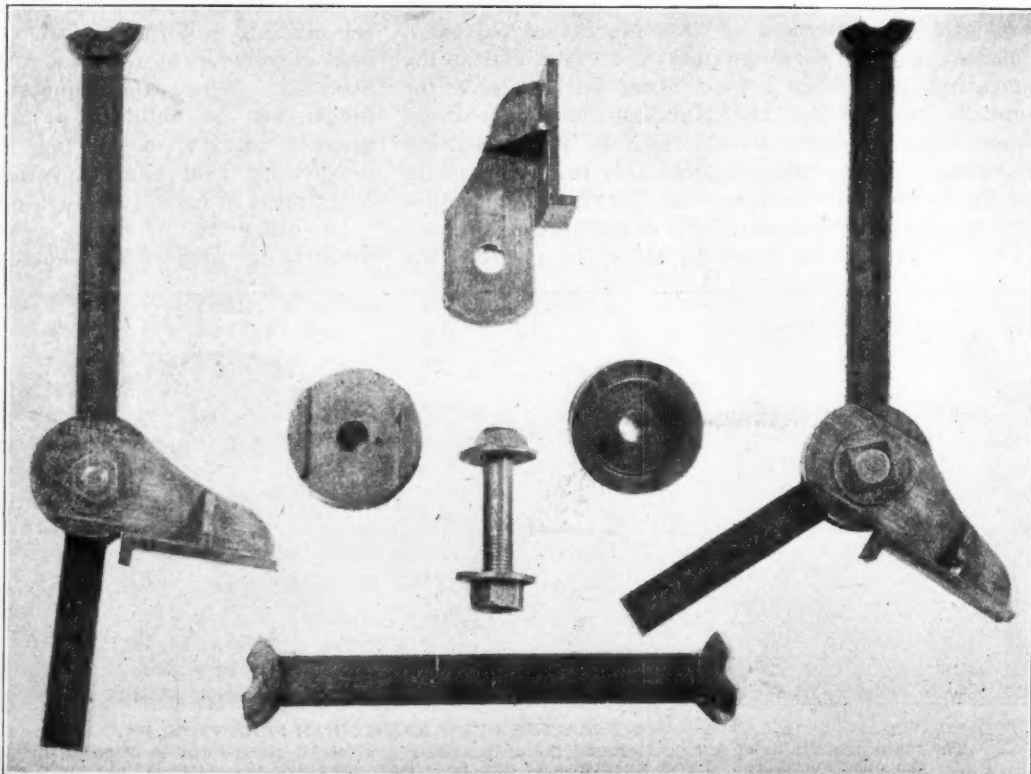
Rugged Conveyor Chain, Repair of Which Delays Operation Only a Few Minutes

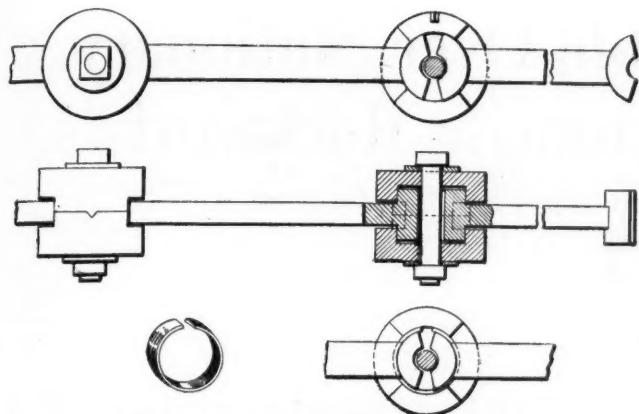
MANY improvements have been made during the past few years in the conveyor chains which find extensive employment in and about collieries. Almost without exception these improvements have sought to lessen the cost of manufacture, to render the chain more reliable and durable, to render its assembly easier or to make it more readily possible to effect the necessary repairs. One of the latest designs is that shown in the accompanying illustration. This is the invention of J. C. Law, of Scranton, Pa., and application has been made for a patent upon it.

As may be seen from the accompanying drawings and photographs, one of the chief results attained in this chain is complete elimination of the riveted joint between links. Furthermore, ease and cheapness of manufacture, as well as of assembly and repair, also are achieved. Essentially the chain consists of a bar link with a double lug upon either end, two cup-shaped drop-forged washers, two plate washers and a bolt.

Rivetless Conveyor Chain

At the base of the illustration is one of the links with its double lugs at each end. In the assembled chains these bear upon the inner surface of the cup-shaped drop-forged washers, shown on either side of the bolt. The assembled links with flight attachments are shown on either side. All that is needed to separate the links is a wrench for freeing the nut from the bolt.





CHAIN FROM VARIOUS VIEWPOINTS

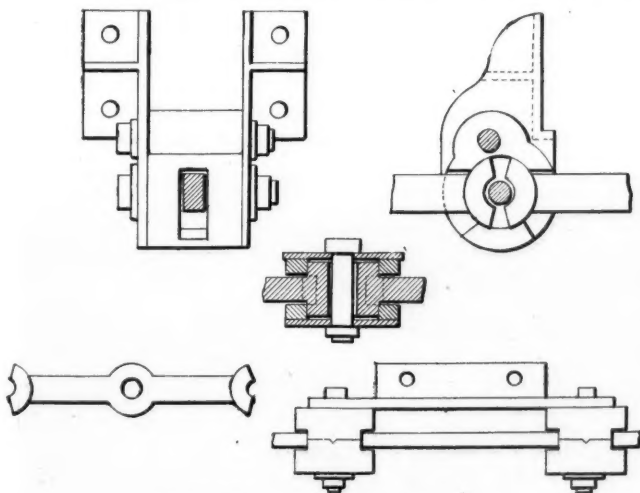
The cross-section shows how the lugs on the ends of the links turn within the washers. The uppermost illustration is a side view of the chain, the operation of which is revealed at the right end by the expedient of omitting the upper washer. The middle illustration is a plan view with a section of one of the joints. At the bottom of the figure is shown a steel spring liner piece which may be inserted should wear allow the lugs too much play.

Various types and sizes of flights or other attachments may be placed either at the joint or in the middle of a link. All parts are of simple construction and except for the bolt, nut and plate washer they all may be constructed of drop-forged steel.

As will be seen, the lugs on the ends of the link are made in such shape as to fit within and bear upon the inner surface of the cup-shaped drop-forged washers. A suitable portion of the rim of the cup-shaped washer is cut away upon either side to permit the reception and movement of the link bar. This, however, leaves ample bearing surface for the lug, yet movement of the parts upon each other as the chain passes over a sprocket is sufficient to all purposes.

The nut on the end of the bolt will, of course, under normal circumstances be locked in position by some suitable means. Removal of this nut allows the bolt to be withdrawn and the cup washers removed, which permits the links of the chain to be readily separated. Thus a wrench is the only tool necessary for the assembling or disassembling of the chain.

In operation, the sprocket driving the chain will bear upon the outer surface of the cup-shaped washers. Should the surfaces of the lugs and the inner surfaces of the cup-shaped washers become worn, a ring liner



VARIOUS FORMS OF FLIGHTS

These drawings show two of the many ways in which to carry the various flights. On the right at the bottom a wholly different arrangement is shown. Here a subsidiary link with a flight is held by both the bolts by which the two ends of a link of the chain are attached to the adjacent links.

of suitable size may be inserted, thus taking up slack motion in the joint. This chain may be used either single or double strand and, as has been already stated, it may carry flights of various sizes and shapes. Thus many alterations in design may be made to suit the chain to local or special conditions of application.

As is well known by mining men, one of the chief requisites of all machinery used in and about the mine is simplicity and ruggedness of construction. The type of men available for work in and around collieries, as a rule, can hardly be considered finished mechanics or machinists. Consequently any piece of apparatus entrusted to their care does not receive the best of attention, and unless it is extremely strong, it is liable to rapid depreciation. It is believed, therefore, that the simplicity, ruggedness and ease of assembly of this chain will commend it to those experienced in the installation and operation of this type of equipment.

Storage-Battery Locomotives Reduce Cost of Gathering Cars in Anthracite Field*

BY K. A. MEYER†
Wilkes-Barre, Pa.

WHERE steam and compressed air formerly were used, electric locomotives and hoists are fast being installed, and where mules labored in the chambers and sideroads, storage-battery locomotives are relieving them and at the same time hauling more coal. This can readily be seen by the following, which shows the results obtained through the installation of five storage-battery locomotives in the Red Ash vein at Exeter Colliery of the Lehigh Valley Coal Co.

In the fifth vein, one locomotive, operating from inside slope to chambers, gangways and airways on roads Nos. 1,002 and 1,006, with chambers pitching both ways and grades in some places as high as 9 per cent, handles fifty cars with a maximum run of about 1,800 ft. When replacing the empty cars this locomotive is assisted by a second locomotive. The latter also covers chambers, airways and gangways on roads Nos. 1,001 and 1,006 and handles sixteen cars with a run of 1,300 ft. in each gangway with grades ranging as high as 7 per cent. To replace these two motors with mule power would take fifteen mules, five drivers and five runners.

In the Babylon vein, one motor hauls from the various working faces on roads Nos. 144 and 147 and handles twenty-five cars daily, having a maximum run of 2,100 ft., and delivers coal to the head of No. 9 plane. It would take nine mules, three drivers and three runners to replace this motor.

The fourth locomotive collects thirty-two cars from roads Nos. 39, 46 and 50 and delivers coal to a big turnout, having a maximum run in each road of 3,500 ft., 2,700 ft. and 3,000 ft. respectively. Nine mules, three drivers and three runners would be required to replace this motor.

The fifth locomotive, operating as a collecting locomotive on road No. 5 and in working faces between chambers Nos. 33 and 47, and assisting in concentrating coal from roads Nos. 65 and 4, handles thirty cars daily over a run of 1,000 ft. having grades up to 5 per cent against loaded trips. It would require six mules, two drivers and two runners to replace this motor.

*Extract from "The Storage Battery Locomotive for Gathering Purposes" in *Employees Magazine* of the Lehigh Valley Coal Co.
†Electrical department, Lehigh Valley Coal Co.

Advantages of Portable Over Stationary Compressors in Anthracite Rockwork*

Costs Less to Install Than a Central Plant and Less for Repairs and Attendance—Highly Acid Mine Water Rusts Out Long Air Lines—Greater Drifting Speed Where Drills Are Used

BY F. H. WAGNER†
Lost Creek, Pa.

BY DRIVING gangways in rock and connecting them by rockholes to the coal bed, thick veins such as the Mammoth and Buck Mountain of the lower anthracite fields have been successfully mined. Thus driven the gangways do not need to be heavily timbered, squeezes in the robbing of pillars are prevented, and the pillar coal is more completely recovered. If one rockhole taps the bed at too high a point for the extraction of the coal at a lower point, this coal can readily be recovered by driving a rockhole from a lower level.

In coal of a thickness of two feet or less it is necessary to lift more or less bottom rock or to blow top rock, as the case may be. The term rock gangway is, in general, applied to roadways of this type. From these gangways at comparatively regular intervals rockholes are excavated from which pillar chutes are driven up and from these the robbing of the Mammoth and Buck Mountain veins proceeds in a manner characteristic of such work.

PNEUMATIC DRILLS SPEED UP DRIFTING WORK

Driving these gangways by hand was slow work, and in order to obtain greater speed, compressed air and jackhammers were introduced. During the World War and for a long period following, much difficulty was experienced in obtaining hand rockmen, and drilling by compressed air met the difficulty even though material was slow in delivery as well as excessive in cost. In driving these rock gangways and rockholes the question arose as to whether it was advisable to use portable air compressors, or a permanent compressor plant located near the power plant with pipes leading into the mine therefrom.

Taking Packer Nos. 2, 3 and 4 collieries as an example, which are practically one, the workings of these operations all having direct inside connections, the material cost of the installation and operation of a central compressor plant with air pipes to the workings would be \$18,500. As these mines are wet, the corrosive and chemical action of the highly acid mine water on the 14,300 ft. of main-airline wrought-steel pipe that would be needed was taken into consideration.

THREE WEEKS OF CORROSION DESTROYS PIPE

A section of 6-in. wrought-steel pipe, in direct contact with the mine water, becomes useless in a trifle over three weeks, hence it is not deemed advisable to use long airlines where they are apt to be exposed to mine water. The application of non-corrosive paint to the surface of these air lines was considered, but the

application of this coating in itself naturally adds to the cost, which is high enough without it. Air lines carried along a main haulage line and tunnel are apt to give trouble as a result of derailments, roof falls, leaky joints, blowouts along seams, etc.

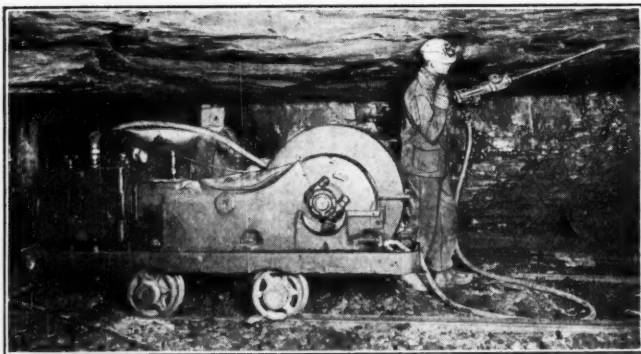
In favor of piping from the central compressor plant to the mine workings, it is argued that the pipe can be utilized in case of mine fires. I have had much experience in this direction. Some of the fires I have fought occurred in mines having a central plant, but the pipe lines unfortunately lay in the newly opened parts of the workings where development and rock work was carried on, while the fires raged in old sections in which no pipe lines were available that could be connected to a pump. Therefore, instead of a central compressed-air plant, we chose portable compressors. The mining and development warranted the purchase of five of these, the initial cost complete (air hammers and hose included) being \$14,550.

These compressors were placed at convenient locations, either along a widened portion of a gangway free from the gangway track or at a gangway and tunnel junction, so near the work that short lengths of line could be used. In general the size of pipe used is 1½ in. on the 10 x 10-in. compressors and 1-in. on the 9 x 8-in. machines.

WOULD FAVOR 10 X 10-IN. AIR COMPRESSORS

In my opinion, the larger of these machines gives better results than the smaller, as they furnish enough air so that four jackhammers can be used at one time with fair results. When only three hammers receive air from the line and the transmission distance does not exceed 600 ft., excellent speed in drilling is obtainable. With 9 x 8-in. compressors only two hammers can be used with success.

The cost of the upkeep on the five compressors for one year amounted to \$480, all five being used and seeing

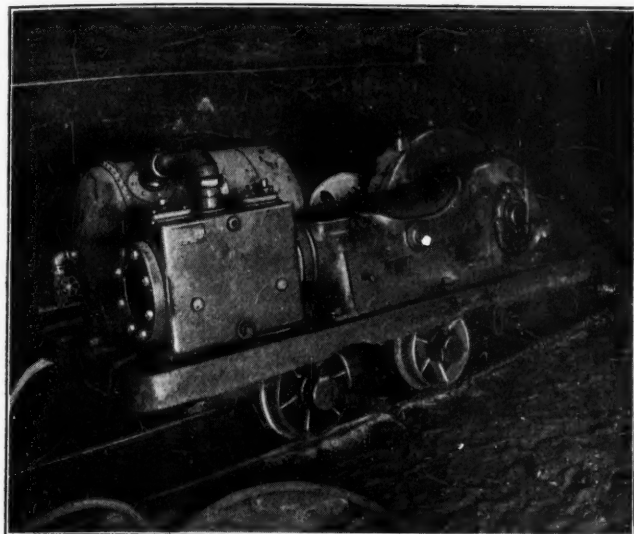


PORTABLE AIR COMPRESSOR AND DRILL

This Ingersoll-Rand electrically-driven mine-car compressor and jackhammer operates in the new mines of the United States Coal & Coke Co., at Lynch, Ky.

*Article entitled "Use of Portable Air Compressors in Coal Mines" and published in the Lehigh Valley Coal Co.'s *Employees' Magazine*.

†Division superintendent, Lehigh Valley Coal Co.



AIR COMPRESSOR IN PENNSYLVANIA COAL CO. MINE

A 9 x 8-in. machine is used in the mines at Avoca, Pa. It is of the same type as that shown in the other illustration in this article. Note how the ends are protected from injury by the bumper extensions of the drill frame.

hard service. The upkeep cost on a centrally-located plant in the same division amounted to \$640. The average life of short-length pipe lines running from a portable compressor is eighteen months. In contrast the main air lines from a centrally-located plant in certain sections must be practically renewed three times. On a 2½-in. line the upkeep cost in eighteen months was about \$460, against \$100 for the lines on the portable compressors.

These machines can be handled as easily as a mine car and have been utilized in two different sections of the mine in the same shift, the compressor being moved to its second location when the drilling in the first was completed. As received from the manufacturer these compressors had too short a wheelbase. In another make of machine the compressor and electric driving units overhung the frame. This was overcome by rebuilding the compressors on a regular car bottom with the standard wheelbase of the colliery.

These portable units need comparatively little care. The colliery electrician looks after the electrical end of the machine and a machinist attends to the mechanical or compressor end. Constant attendance is not required, but, like all other machinery, these units need a reasonable amount of supervision. They do not, however, demand the undivided services of an attendant, as does a centrally-operated air plant.

The use of portable compressors naturally is not confined to rock gangway and rockholes, as they are suited to rock work of any nature as well as to the drilling of particularly hard seams of coal.

Strength and Simplicity Mark One Trolley Ear and Ease of Alignment Another

MANY have been the devices perfected and placed on the market for supporting the trolley wire in mines, some being suited to one condition and some to another. Probably no hanger ever devised will successfully or even advantageously meet all conditions imposed by mining operations.

The clamp shown in Fig. 1 of the accompanying illustrations is notable for its simplicity. It consists of only two jaws, a boss and a jam nut. As a result

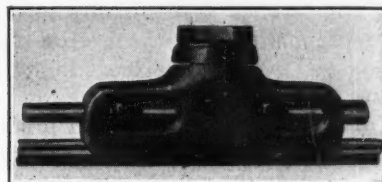
these few pieces can be and are made heavy and strong and yet the clamp can be manufactured without undue expense.

The wedge clamp, Fig. 2, is extremely popular in some fields and embodies some new ideas. It aligns with the wire without placing undue stress upon the insulation. After the clamp has been screwed upon the hanger and before the wedge is driven home the jaws may be rotated sufficiently to bring them into line with the trolley. A few blows of the hammer on the wedge then tightens the clamp upon both wire and hanger. Another valuable feature of this clamp is its even distribution of pressure along the entire length of the jaws. Both of these new clamps are being manufactured and marketed by the Ohio Brass Co., of Mansfield, Ohio.



CLAMP OF FEW PARTS

Being simple it can be made strong and heavy.



WEDGE CLAMP

Aligns readily with trolley wire without setting up strain.

Output of Ruhr Collieries Grows

OUTPUT of Ruhr collieries during February, 1921, (twenty-four working days) amounted to 8,174,606 tons of coal, compared with 8,072,912 tons in January, 1921 (twenty-four working days), the daily output thus being 340,609 tons, against 332,904 tons in January, 1921, and 383,088 tons in February, 1913. The increase in daily output is largely due to extra shifts and a decrease in strikes. The total number of men employed at the collieries at the end of February is given at 539,099 compared with 537,399 men in January.

SWISS COAL IMPORTS during February, 1921, were as follows:

Origin	Metric Tons
Saar	1,666
Ruhr	10,638
Rhenish lignite.....	2,382
Belgium	2,667
France	1,738
England	24,054
United States.....	66,153

Total109,298

The above compares with imports during January, 1921, of 215,017 tons and 100,688 tons in February, 1919.

WORKING TIME IN THE SARRE DISTRICT has been reduced by three shifts weekly. In explanation of this reduction the administration makes the statement that it has been caused by lack of demand in the case of the home market, while in the neighboring German provinces the difference of price between Sarre and German coal makes sales prohibitive. This reduction of working time decreases production at the rate of 100,000 tons per year.

SPANISH MINERS in the northern and southern districts are opposing the suggested cut in wages and are threatening to declare a general strike in protest against the proposal of the employers. The men already have left the mines in several districts in the Asturias and Jaen.

THE AUSTRIAN GOVERNMENT has contracted with Dutch collieries for delivery of coal for industrial purposes.

Long-Term Credit—The Invisible Bridge Over the Export Barrier*

Obstacle of Necessity to Pay Within Ninety Days Eliminated by Foreign Trade Financing Corporation, Organized Under Edge Act—Capital, \$100,000,000; Debentures Limited to \$1,050,000,000—Operation Expected Late This Spring

BY F. W. GEHLE

THE Belgian may give us as many francs as he used to for a dollar's worth of coal, but he will find that he still owes 63c. The Italian has to pay four times as many lire as once was his custom. For the Chinaman buying from us the exchange rates have sent prices 50 per cent higher. Even the Englishman finds a premium of 20c. on every dollar's worth of his money expended for our products. And so through the long line of countries, the \$4,000,000,000 debt that has been built up in our favor has resulted in an exchange rate that is overwhelmingly against the foreign purchaser.

And, more than that, the overseas customer has been unable to buy our goods in the usual proportion because of a temporary lack of ready funds and because of our own inability to sell to him on long-term credit. We have had to ask him to pay in the usual sixty or ninety days; we have been unable to finance the transportation of our goods through their entire trip to the consumer.

It was to fill this deficiency in our financial system that in December, 1919, the Edge act was passed, providing for the organization of corporations for the financing of such credits, and it is largely through the biggest of these corporations, the new Foreign Trade Financing Corporation, that bankers, manufacturers and farmers hope for some satisfactory effect upon our waning export market.

SALE OF STOCK WILL BEGIN MAY 1

The Foreign Trade Financing Corporation, the product of two years' thought of a committee of the American Bankers' Association, will on May 1 begin an intensive sale of its capital stock at \$100 a share plus a payment of \$5 a share to provide a surplus fund for emergency purposes. The authorized issue of this stock will be \$100,000,000, but upon the completion of the stock sale, debentures to the amount of ten times the capital and surplus will be issued. The sale of these will be limited to \$1,050,000,000.

Already part of the stock has been sold, but up to the present time the main body of the work of the corporation has been the organization of committees in the sixty-four Federal Reserve cities of the country to stimulate an interest in foreign trade, to sell the stock, and to pave the way for the sale of the debentures. These committees, with a banker, a commercial representative, and a farmer on each, assure the widest possible interest in the project. In all parts of the country,

in every station of life, in every calling of mankind, they will seek to place the debentures, to the end that America's interest in her foreign trade, on which her prosperity must more and more depend, may be a wholehearted one.

The exact time of the functioning of the corporation cannot yet be announced definitely, but a recent statement by John McHugh, chairman of the committee on organization and probable chairman of the board of directors, indicates that there is some expectation that operation will begin late in the spring.

TO INVESTIGATE WORLD TRADE CONDITIONS

The actual decision as to the time of opening will be left in the hands of a committee appointed recently. This "Committee on Policy" will first make an investigation of trade conditions in the countries of the world, and upon these men will rest the decision as to the time of calling for payments on stock subscriptions. The members of this committee are as follows: Levi L. Rue, president, Philadelphia National Bank, Philadelphia; Paul M. Warburg, former governor of the Federal Reserve Board; John J. Mitchell, chairman of the board, Illinois Trust & Savings Co., Chicago; Philip Stockton, president, Old Colony Trust Co., Boston; E. F. Swinney, president, First National Bank, Kansas City, Mo.; and F. O. Watts, president, First National Bank, St. Louis, Mo.

Developments in the past few days have pointed to an increasing national interest in the organization of the corporation. Within a little more than a week the legislatures of six states have passed "enabling acts" permitting state banks and trust companies to purchase stock in this corporation. At the same time there is a movement under way favoring an amendment to the Federal Reserve law to permit the corporation to call for payments on its subscriptions as they are needed instead of at the arbitrary periods now specified by the law.

It is apparent that there is beginning to be in this country a well-defined feeling that foreign trade differs from interstate trade mainly in that state boundaries have become oceans. Both are essential to our prosperity. And it will be the capitalization of that feeling that will come to the support of American exports—that will build a bridge of long-term credit over the barrier that holds our ships at anchor, freight cars uncargoed on their sidings, and workmen idle.

AMERICAN COAL IS BEING OFFERED TO manufacturers in the region of Halle 20 marks below German coal in the world's market. The opportunity for selling American coal in Germany apparently is all the more favorable because of the unwillingness to buy English coal.

*We have been hearing so much about the Edge Law and the Foreign Trade Financing Corporation that we asked the Executive Committee on Organization of that corporation to tell *Coal Age* readers just how it affects them and how they can get in on the proposition.—EDITOR.



WATERFRONT AT KIEL HARBOR, GERMANY

American Export Possibilities Denoted by Sidelights on The Coal Situation in Foreign Countries

European, African and South American Markets, Formerly Dominated by Great Britain and Germany, Have Become Available to America Since the War—Substitution by Unscrupulous Exporters Has Roused Suspicion Against American Product in Italy

BY DR. HENRY M. PAYNE*

AUSTRALIA'S consumption of coal is approximately 9,000,000 tons per year, and the average exports during the past seven years have amounted to 476,000 tons per year. Coal is found in every state in the Commonwealth. The fields of New South Wales are more extensively developed than those in any other state and consist of all grades from lignite to bituminous gas coal.

In Victoria a high-tension power station is now under construction which will supply all the power requirements of the state. To furnish the requisite fuel, extensive mining development is being made in both bituminous and lignite deposits. New coal fields have recently been discovered near tidewater in western Australia, which are expected to play an important part in building up Australian export trade to South America.

The principal coal consumers in the Argentine are the British-owned railways, comprising a system of over 22,000 miles. Until 1913 about 98 per cent of the coal imported came from Great Britain and 2 per cent from the United States. In 1919 England shipped 57 per cent and the United States 43 per cent. In 1920 the position was reversed, the United States exporting 87 per cent and Great Britain 13 per cent, the total amount being 2,070,000 tons. In the month of October, 1920, 98 per cent came from the United States, and 2 per cent from Great Britain, notwithstanding exchange rates unfavorable to America and low freight rates favorable to England.

American coal thus has come into distinct favor in the Argentine and at River Plate ports, but to hold this business will require the highest standard of commercial ethics and the development of personal acquaintance with the consignee's requirements. Return cargoes of hides, wool and cereals offer advantages to the coal exporter who is prepared also to become an importer. Many of the ports on the Plate are controlled by British shipping interests. On

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this account, towage, wharfage, etc., may be more expeditiously handled by the consignee. Labor troubles at Buenos Aires frequently add to demurrage difficulties.

There is a coal field of limited area at Comodoro Rivadavia which is being rapidly developed under government supervision. This output, however, will scarcely serve to supply the increased requirements that will result from extensions of the State Railways now being built.

Argentine credits usually are payable upon arrival of cargo rather than cash against documents on sailings, the shipper being secured by insurance.

MINE-LABOR COSTS LOW IN AFRICA

As a continent, Africa is poorly supplied with coal, the principal known deposits being 97 per cent in South Africa and 1 per cent in Rhodesia. The proximity of these deposits to the Witwatersrand gold fields has made extensive development possible by low labor costs.

South African coal now ranks second only to East Indian coal in cost of production, and is therefore rapidly becoming a factor in export trade to Aden, Ceylon, Argentina, Egypt, Uruguay, India, Mauritius and Zanzibar, as well as to coastwise African ports, and for bunker purposes.

The retail price (September, 1920) was 25s. (normal rate \$6.08). Transvaal coal runs higher in ash than Natal coal, averaging about 13,500 B.t.u. A series of tests made on these fuels indicated that 100 lb. of Welsh coal were equivalent to 128 lb. of Natal coal or 182 lb. of Transvaal product.

An interesting study of wages is given in recently published statistics. The South African coal mines employ approximately 32,000 men. White men receive an average of £33 per month, Transvaal natives £2 9s. 8d. per month with food and lodging thrown in, Asiatics are paid an average of £2 11s. 9d. with food and lodging, and Natal natives £2 6s. 2d. with food and lodging. Board and lodging are estimated at 1s. per day.

A recent quotation on Natal bunker coal at Durban was

41s., which is the lowest price at any port in this section of the world.

In 1912 coke was imported into the South African Union to the value of £68,007. Coke ovens have been built, however, in rapidly increasing numbers, until in 1918 only £823 worth of coke and anthracite briquets was imported.

In August, 1920, ships were waiting at the port of Durban for 100,000 tons of bunker coal. In order to protect the export and bunkering industry, official standards and classification into pools, analogous to the Tidewater coal exchanges of America are being worked out.

Belgium has always used more coal than it could produce. The local production is estimated at 10 per cent gas coal, 26 per cent coking and smithing coal, 43 per cent low-volatile coal, and 21 per cent anthracite. Of this output, normally approximating 23,000,000 tons, 5,000,000 tons were exported, principally to France, and 9,000,000 tons of gas coal were imported, the imports in 1913 being 68 per cent from Germany, 29 per cent from Great Britain, and 3 per cent from the United States. These proportions were materially changed in favor of the United States during the war, but present exchange rates practically preclude the importation of American coal.

Briquets, anthracite and low-grade low-volatile coals are principally used for steam purposes, the high-volatile coals going into the gas plants and the manufacture of coke and steel.

Prior to the war, automatic stoker grates were known only through having been shown at industrial exhibitions. At the present time, the Brussels tramway power plant, Société d'Electricité de l'Escaut at Antwerp, the Glaceries Floreffe at Floreffe, the Duché Chemical Works at Vilvorde, the New Orleans Cotton Mill at Ghent, and the Bernaerts Mill at Wetteren, all are equipped with American underfeed stokers. Nine other industrial establishments also have installed various types of automatic stoker.

SPECIAL GRATES NEEDED FOR BELGIAN COAL

The American grate requires special construction, however, as Belgian coal runs so high in sulphur that grate bars, unless specially constructed, will fuse within forty-eight hours. Belgian coal also requires a very thin fire which is slow to ignite but is quickly consumed. The stoker must thus deliver new coal at the critical moment between primary distillation and reduction to ash.

There are no specific anti-smoke ordinances, but the law requires that factory chimneys shall be built at least 5 meters above the highest neighboring building within a radius of 50 meters from it. According to the civil code, however, recovery may be had at law for damage caused by smoke from a factory chimney.

Belgian locomotives are equipped with smoke consumers and the National Railroad Administration, which is the largest customer of the native mines, regulates the amount of volatile matter and ash which it will accept. These limits run from 5 per cent to 16 per cent in ash and for coke 5 per cent volatile matter; anthracite 6 per cent to 10½ per cent volatile matter; bituminous coal 13 per cent to 20 per cent volatile matter. Briquets averaging 14 to 16 per cent volatile constitute 47 per cent of the total railroad fuel consumption.

Shortness of haul from either mine or port has rendered storage unnecessary. Canalboats of 1,500-2,000 tons capacity are available at Antwerp. The cotton mills at Ghent have ample room for storage, but rarely acquire more than one week's supply.

Belgian gas coals run so high in sulphur that abnormal purifying capacity is provided at all gas plants. Gas when delivered is supposed to be sufficiently free from H₂S not to color paper impregnated with a 1 per cent solution of lead acetate. Nearly all the plants are equipped with horizontal retorts, which are charged mechanically.

Prior to the war, an average yield of 400 cu.meters (14,125 cu.ft.) of gas per ton of coal was obtained, but the present yield is about 255 cu.meters (9,005 cu.ft.), due to the quality of coal in use. From 70-100 liters of ammonia (18-26 gal.) and 55-90 liters of tar (14-24 gal.) are recovered. Gashouse coke is sold for domestic fuel, while

certain plants specialize in metallurgical coke and the various coal-tar products. A high fusing point of ash is sought especially for glass furnaces, marine purposes and railways.

Few customers deal direct with the mines, as the brokers (wholesalers) give regular customers advantageous credits and by frequent visits to the mines and the consumers ensure suitable delivery in specified amounts and of proper quality, the whole keynote of the transaction being "service." At the end of each month the broker bills his sales direct to the client on statements prepared by the colliery, draws a draft for the amount thereof in favor of the operator, who is thus covered for the coal supplied. The operator then deducts the agreed percentage for each of the wholesalers and pays the same, banking the difference to his own credit.

At present, prices f.o.b. mine are fixed by the Belgian Government at an advance of from 25 per cent to 33 per cent over prices prevailing Jan. 1, 1920. German shipments are co-operatively divided among various groups of consumers and the State Railways. German coal is delivered to cars at Hamont for rail shipment, and to canalboats at Duisburg-Ruhrort for water shipment (Nov, 1920) at 113.50 fr. per ton.

The port of Antwerp is admirably equipped with barges, cranes, tidal basins, etc., and contracts may be made with the port authorities for permanent use of certain moorings, quays, and warehouses at reduced rates. The harbor authorities are friendly toward American tonnage.

Return cargoes usually are available in plate glass, glassware, textiles, gloves, artificial silk, chemicals and dyes, laces, sugar, chicory, and Belgian Congo products, such as copper, ivory, and copal. Transshipment of Scandinavian lumber may be made to English ports, and Belgian rails, ingots, blooms and rolling mill products are now competing with similar products from other nations.

The present unloading capacity of the harbor of Antwerp is 500,000 tons per month, and of Ghent 250,000 tons per month. If the port authorities of Antwerp brought back the floating derricks rented by them in Ghent and Rotterdam, this port could handle 1,000,000 tons per month.

The most practical method of selling American coal in Belgium would be to organize a sales office at Antwerp with a large yard on the river front, where boats could be unloaded. The whole of northern Belgium needs industrial coal, and consumers would be glad to have more, of stable quality, at a reasonable price, but cannot get it. There is no car shortage, and labor is more efficient than at any other northern ports.

CHINESE COAL DEPOSITS LIKELY TO BE DEVELOPED

But very little trade information has been obtained from China. There is ample cargo available for return voyages, but there is little demand in the United States for Chinese products. Trade Commissioner Whitham's reports deal extensively with terminal and unloading facilities. It is not unlikely that the extensive coal deposits of China will be developed on a commercial scale within the next few years and that Chinese coal will become a decided competitor in export trade.

CZECHO-SLOVAKIA WILL ACCEPT GOOD SCREENED COAL

During the first three months of 1920 coal was mined by 370 concerns in Czecho-Slovakia, 225 producing lignite and 145 producing bituminous. In Bohemia there are 310 operations, in Moravia 24, Silesia 33, and Slovakia 3. About 123,000 miners are employed.

The militarization of the mines during the war, while it temporarily increased production, necessarily had a detrimental effect on the equipment, which with labor troubles and car shortage, has since decreased the output.

The decision of the Entente in regard to the boundary line between Czecho-Slovakia and Poland has saved to Czecho-Slovakia 27 per cent of its coal production. With all this the Industrial Institute of Prague estimates the annual shortage of coal at 3,600,000 tons. Any good screened coal which will stand handling is acceptable.

Discharge facilities at the various ports are exceedingly poor. To offset this, however, a wide diversity of return cargoes is offered, such as lumber, magnesite, Gablonz

goods, glass, china, porcelain, sugar, malt, hops, bentwood furniture, paper, gloves, sodium cyanide, dyes and cotton goods.

A coal council advises with the Ministry of Public Works in the formation of rules and regulations for mining, distribution, equalization of production and consumption, fixing of selling prices, maximum profit of operators, quantity to be produced by each mine, and the designation of the appropriate market for each mine. The law also provides for a tax of 30 per cent of the selling price f.o.b. mine. As a result, the price of coal has advanced about 40 per cent.

BULK OF DANISH COAL IMPORTS COME FROM AMERICA

About one-third the total consumption of coal in Denmark is gas coal. The railways prefer screened lump for steam purposes. About 10 per cent of the industrial plants are equipped with stoker grates, but these plants consume 40 per cent of the steam coal. The large plants with stoker equipment operate crushers, while the smaller operations use slack when obtainable, or crush the lumps by hand.

Smoke consumers are not in favor, the location of plants in outlying districts being preferred. The State Railways and the Municipal Gas Works have about six months' storage capacity, while the power plants rarely store more than three months' supply.

Before the war British and German coal were principally used, but since June, 1919, American coal has constituted the bulk of the importations. This condition can be maintained, if the integrity of American exporters themselves, as well as of their coal, can be established. Unfortunate substitutions of buckwheat for gas coals by certain unprincipled exporters have created a marked distrust in Danish financial circles, which makes the establishment of credits in America increasingly difficult.

The purifying capacity of Danish gas works is ample, so that gas coal containing up to 2½ per cent of sulphur can be used. Mechanically charged horizontal retorts are the usual equipment, although the Copenhagen Municipal Gas Works are planning to install vertical retorts. The usual yield is about 5 cu ft. of gas per pound of coal. Coke and tar are the principal byproducts. No particular effort has been made to develop further coal-tar byproducts of dyes.

No attempt has been made at collective buying, as each consumer arranges his own credits. Unloading facilities are satisfactory at Copenhagen. At Aarhus, Aalborg and Korsør the discharge rate is 500-700 tons per day.

The only direct return cargoes for the United States consist of flint pebbles and chalk. After discharging their coal cargoes American vessels usually obtain cargoes in Norway or Sweden or at other Baltic ports, consisting of iron ore, timber, wood pulp or stone, destined to England or France, and there obtain other cargoes for the United States.

FINLAND DEPENDS LARGELY UPON WOOD FOR FUEL

Finland imports only slack coal, as wood is the principal fuel. The Finnish merchant marine obtains bunker coal at foreign ports. The gas plants at Helsingfors, Abo and Viborg formerly obtained gas coal from Germany, but at present birch wood is used, which lowers the temperature of the retorts to about 1,200 deg. C. and gives a much lower yield of gas.

Terminal conditions are poor, but demurrage rates are low. The rate of discharge is about 400-500 tons per day for such gas slack as is imported for use in the railway shops.

Return cargoes consist principally of wood and paper pulp, and on account of low freight rates vessels usually prefer to go elsewhere for cargoes.

EXCHANGE CURTAILS EXPORT OF AMERICAN COAL TO ITALY

Italian imports of American coal have been declining, due principally to the exchange situation, which puts the British exporter in a position to undersell the American exporter in the Italian market. In November, 1920, American coal was quoted c.i.f. Italy at from 650 to 700 lire. At the same time British coal was quoted at from 115s. to 120s. f.o.b. piers, with a 25s. freight rate. At present exchange this works out to about 575 lire per ton.

With Italian exchange around 17 or 18, American coal

could compete on a fifty-fifty basis with coal from Great Britain. An appreciation of the lira below this would give us a commanding position, while a depreciation above 20 turns the scale in favor of British competition.

The communistic seizure of several metallurgical plants also has militated against the importation of American coal. Many coal consumers have suspended operation.

Receipts of German coal are increasing. Under a trade agreement with France, Italy is to receive French coal in proportion to the number of Italian laborers who pass to France for work in French coal mines. It is officially stated, however, that although a steady stream of these laborers has been passing into France, less than fifty tons of coal have been so far received.

Belgium promised Italy 50,000 tons of coal per month, but has actually despatched during eight months 80,463 tons. About 56 per cent of the total Italian consumption of coal is required for the railroads, all of which must be low-volatile coal on account of the numerous tunnels and the municipal smoke ordinances of towns through which they pass. About 25 per cent of the total consumption is gas coal and 19 per cent high-volatile steam coal, usually screened lump. About 10 per cent of the industrial boiler area is equipped with stoker grates.

Storage facilities are ample and no difficulties were encountered from heating when Cardiff coal was used. Upon their introduction, Georges Creek and Pocahontas were well received and gave entire satisfaction. All kinds of coal, however, were shipped by a few unscrupulous exporters during the past year under the generic names of "Georges Creek" and "Pocahontas," and as a consequence these names no longer convey a superior significance. Substitutions of this kind, received wet, have caused spontaneous combustion and have done much to injure the reputation of American coal and American exporters.

The distinction known to American trade in the matter of seasonal coal distribution does not obtain in Italy, where snow is unknown except in the mountains and where the harbors are never frozen.

The gas plants are equipped to handle coal not exceeding 1 per cent in sulphur. During the past year, however, coal as high as 3 per cent in sulphur has been used, with consequent overloading of the purifying boxes. All the newer plants have mechanically charged vertical retorts and the average yield per ton is about 300 cubic meters (10,594 cu ft.).

Detailed attention is paid to the recovery of every possible byproduct, and the proceeds from these sales are sufficient to cover the overhead and cost of production, leaving the returns from the gas industry as a net profit.

Wide diversity of method has existed in purchasing coal. The Royal Italian Commission in New York has conducted some of the negotiations, while many of the larger companies have sent their own representatives direct to Italy, and one company has its own agency in Genoa. As a result there is frequently a divergence in price of more than \$2 a ton on consignments of coal being simultaneously unloaded at the same port.

Genoa is the logical port for northern Italy, but because of the quantities of coal and other merchandise also passing through Genoa for Switzerland, its facilities have become overtaxed, and the less congested ports of Spezia, Leghorn and Naples are equally available with only slightly longer rail hauls to the industrial centers. The new port of Savona also is being developed to relieve the congestion at Genoa. The port of Trieste, which was splendidly equipped by Austria, has ample dock and storage space, with electric cranes and other modern devices.

Return cargoes consist principally of fine marble and lemons, on which, however, freight rates are low and time required for loading is a disadvantage.

IN THE ORIENT bunker coal is still high, although it recently dropped \$3 a ton and stocks are heavy. The condition in the East is due principally to the Japanese monopoly of the market and their ability to manipulate prices. England has found it impossible to compete with this country in the production of bunker coal and the future American coal interests in that country appear promising.



Problems of Operating Men

Edited by
James T. Beard



Working Contorted Coal

Where Coal Seams Are Much Contorted There Is Advantage in Sinking One or More Shafts, Driving Rock Tunnels to the Seam and Working Out the Coal in Separate Levels, by Gangways and Inclines Driven in the Seam. Conditions Vary the Methods Employed

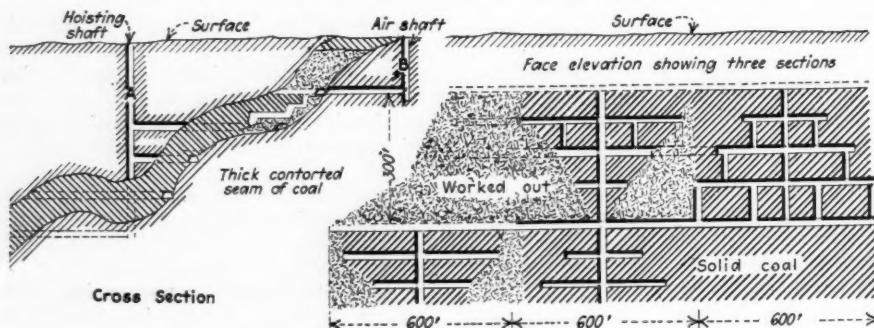
HAVING been much interested in the question presented some time since in *Coal Age*, Nov. 4, p. 954, and referred to again in the issue of Jan. 27, p. 187, I am inclined to present the following brief description of methods I have employed under varying conditions and which I hope may be a help to someone.

We will first assume that the pitch of the seam is moderate and the coal, varying from 15 to 20 ft. in thickness, is soft, gaseous, and produces sufficient refuse to afford a liberal supply for packing.

As shown in the cross-section on the left of the accompanying figure, I would

The extraction of the coal, as shown in the face elevation on the right of the figure, starts at the head of each road and is carried on in steps, on the re-treating plan, taking care to pack well the gob area left behind. The work proceeds in sections, each successive incline being driven in the center of its section. Three of these sections in various stages of extraction are shown in the figure.

According to the thickness of the seam, the coal is worked in successive benches. In the first bench at the floor, the coal is mined and blasted; or it may be shot off the solid. As each lower bench is advanced, the bench



PRACTICAL METHOD OF WORKING CONTORTED COAL SEAMS

suggest sinking two shafts, A and B, and driving rock tunnels from each of these so as to reach the seam at different levels, say 300 ft. apart, vertical measurement. The shaft B and tunnel on the higher level can be used later for lowering timber and other supplies, after the lift above has been practically worked out. The shaft A and lower tunnel will be used for hoisting the coal from the second lift.

The extraction of the coal in either lift is started by driving gangways to the right and left of the tunnel, inclines being then driven up the pitch on the floor of the seam. The inclines are each extended from the gangway level to the gangway or level above. From these inclines level roads are driven to the right and left on the strike of the seam. The roads are driven about 40 or 45 ft. apart, while the inclines are 600 ft. apart.

above is wedged down, the miners standing on the refuse built up as the work proceeds.

Where the inclination is nearly vertical and the thickness of the coal, say 90 ft. or more, the extraction is made by tunnel roads as before. But now, the work is performed in sections that are horizontal, instead of being extended in the bedding plane or inclination of the seam. These sections may have a vertical height of 60 ft.

Each section is divided into three parts by sublevels, which are again divided into three parts or benches, and these are advanced in steps, after the plan just described. It should be explained here that, in this case, the tunnels are stopped before they reach the seam; and level roads or gangways are driven, in the rock, to the right and left and parallel to the seam. These rock tunnels and roads are, of course, ex-

pensive to drive but they cost little to maintain.

From these rock gangways, small roads are driven to tap the seam, and an inclined plane is then run, either on the full pitch or across the pitch to the upper level. An additional road is also driven, from the foot of the incline to the floor of the seam where strike roads or levels are driven to the right and left the full length of the section.

Again, assuming the coal is thin, varying from 3 deep to 7 ft. in thickness, and pitching from 35 deg. to 70 deg., with bad roof or a drawslate. In this case, the coal is worked in levels as before, the sections being 20 ft. high, instead of 60 ft., and all the coal is taken out in one operation, by strike roads 25 ft. apart and well timbered.

Where coal pockets are encountered, the safest method is to drive an uprise, from the lower to the upper level at the roof of the pocket, and begin the extraction of the coal at the roof, by taking out a slice 8 by 9 ft. a distance of 12 ft. at a time. In this opening, strong timbers are first laid on the floor and cross-timbers rested on them. These are covered with heavy planks on which refuse is packed to the roof.

Now, leaving a small opening for ventilation, the work of taking out a second slice below is started, by placing heavy timbers or posts to support the long timbers above, as the coal is taken out. The work is continued in this manner down to the floor of the pocket. It is costly and dangerous and requires good packing and watchfulness. It must be performed only by experienced men.

Peru, Ill.

GASTON F. LIBIEZ.

Observed Difference in the Handling of Men

Two mines visited present a strong contrast in respect to the methods of the foremen in the handling of men and the results obtained.

VISITS recently paid to two mines not a great distance apart showed such a strong contrast in the methods employed by two operators, in the handling of their men, that I decided to present my observations to the readers of *Coal Age* for their consideration. I was prompted to do this by the reading of an article not long since, entitled "Tact vs. Discipline" (*Coal Age*, Dec. 23, p. 1289).

In that article, emphasis was placed on the fact that tact in dealing with

miners should never be sacrificed to discipline. My observations at these two mines bear out the truth of that statement. For the sake of distinction, I will call the places visited Mine No. 1 and Mine No. 2. But, let it not be thought that these two mines are exceptional cases. They are no different from other mines I have visited in this and other states.

At Mine No. 1, I found men using iron tampingbars, in charging their holes with black powder. The condition of the powder kegs showed that the kegs had been opened by punching a hole in the end with a pick—a dangerous practice. In the rooms in this mine, the timber was not kept up to the faces. The tools were scattered about and everything had the appearance of a great lack of discipline; there was no order anywhere.

DISREGARD OF SAFETY

Talking with the men regarding the danger of using iron tamping bars and opening kegs of powder with a pick, brought the response that they could see no danger in those things, as they had always worked that way. Coming out of the mine, I found the operator in an amiable mood, which was his usual habit. He had a smile for everybody, and was no doubt regarded as a fine man to whom none would take exception on any account.

My observations below, however, led me to inquire more particularly as to results. I found that the men did about as they pleased, came to work when they pleased, and stayed at home when they pleased. There would be a good run of coal one day and, perhaps, the mine would not run the day following. All depends on the men showing up for work. Following every payday, it was the usual habit for the men to take a rest. When sick or hurt by accident they were trusted at the store.

Everything throughout the camp was on a par with what I saw in the mine. The houses in which the men lived presented a poor appearance. Most of the families did not send their children to school, and the youngsters were to be seen any hour of the day or night playing about the streets, poorly clad. I asked myself who would want to live in these surroundings, and who would want to work in such a mine?

EFFECT OF DISCIPLINE IN CREATING SAFE PRACTICES

My visit to Mine No. 2 was a pleasing contrast. Here, it was plainly evident that there was a different set of men employed. That was apparent on the surface from the tidy appearance of the buildings and other equipment. Despite the early hour, the operator was there on the job and he was a busy man with little time to spare, except for a good word with this one and that.

Going below I found no iron tampers, nor powder kegs with holes punched in them by a pick. Every man was at his place and things were moving quietly and in order. The face of every room showed that the place was well kept.

I did not have to be told that the impelling force, in that mine, was discipline.

Coming to the surface, I drew from the operator, in brief intervals of questioning, that he got results by giving every man to understand that he must do what he is told. Everyone was given a square deal and was expected to give the same in return, by being prompt and regular in their attendance at the mine, which is run every day, except Sundays and holidays.

EFFECT MANIFEST IN CAMP LIFE

The streets and the houses presented a neat and tidy condition and reflected the character of the people who lived in them. I was informed that men were hired at the mines only on the condition that they would work steadily, obey orders and send their children to school regularly. There was a good school, which I believe is the backbone of the organization.

In this camp there was a good store that provided the necessities of life, an excellent welfare building where the men were given every privilege and received teaching and training. Everyone was happy and prosperous and I departed saying to myself, What a contrast and all the results of building an organization by discipline.

Louisville, Ky.

OBSERVER.

Honesty, Safety, Efficiency

The honest miner is a safe miner and these two elements combined make him efficient.

NUMEROUS letters appearing recently in *Coal Age* have dwelt on the many features that combine to make the miner a practical, safe and skilled workman. I believe that the comprehensive meaning of all these letters is that a miner who is perfectly honest, in respect to safety, will eventually prove himself efficient, and his efforts will insure his recognition and advancement.

Few will deny that honesty is the big factor in the dealings of man with man. A man must first be honest with himself, and he will not fail in honesty toward his coworkers, his superiors in the mine and his family at home. As the immortal Shakespeare has put it, "To thine own self be true and thou canst not then be false to any man."

When a man is truly honest his sincerity of action is unquestioned, and he is regarded by all as being absolutely fair in his dealings and one to be trusted. It is this feature that makes him a safe miner, or a safe official, if he has risen to that dignity.

The efficiency of a worker, be he miner or official in charge of men, is a separate feature and depends largely on his being a *qualified* person. Without being first honest and safe, in all his dealings and practice, a man cannot be truly efficient.

A foreman may be regarded by his company as efficient because of the big tonnage produced in the mine in his charge; and yet he may lack being

honest and safe, which can be proved by the many disputed claims that reach the office and the too frequent occurrence of accidents that should be avoided by more constant and thorough supervision.

Other writers have referred to the fact that "Years in the mine do not always make the skilled miner." (*Coal Age*, Nov. 11, p. 1003.) It is the man who is willing to learn that eventually develops the highest efficiency in his work.

In a recent conversation with a mining man of long experience, I was not surprised to hear him remark, "I learned something today that I have never experienced before, in my years of practice in the mines of Europe and this country." The man who is a close observer can always learn something new regardless of his "years of experience."

RESPONSIBILITY OF OFFICIALS

The thought comes to me, in this connection, that the responsibility of mine officials is greater than is often realized. We learn something every day, but we fail to pass on our knowledge to the other fellow. All of us are acquainted with miners who have mined coal for years, but whose methods and upkeep of their places show they have not been instructed as they should have been by those charged with their safety.

When a miner is caught by a fall of slate or coal, we invariably hear the cry of "carelessness." But why condemn the victim so severely when a foreman or assistant foreman is probably the one justly to blame. It may be true that the man was careless and disobeyed the instructions given him to set the posts that should have made him safe. But, what about the official who gave the instructions?

Either the foreman or the assistant foreman should have known the failing of the man, and have given him more careful supervision to see that his orders were obeyed promptly. Knowing the place to be unsafe, the official should have remained long enough to see that the work was done and the roof made secure.

POSSIBLE RESULTS OF INEFFICIENT SUPERVISION OF MEN

Taking the mines as a whole, the point is conceded that the larger percentage of accidents to miners are caused by falls of roof or coal; yet, taking each mine separately, it can be shown that this statement does not hold true in all cases. We must go back to Franklin's saying, "A small leak will sink a great ship." A foreman's or assistant foreman's failure to enter a man's place may be the leak responsible for his death by a roof fall a little later.

While it is not good policy to keep driving at a man constantly, there is no doubt of the need of continually preaching safety. The neglect of foremen to do this has resulted in old miners practicing unsafe methods in many ways. What then could be ex-

pected of the younger men sent into the mine and placed in charge of these older miners to receive supervision and instruction in their work.

There is one point I want to mention, however, before closing. I want to say that the miner who continually disobeys the instructions given him is a dangerous man. The foreman who keeps him on the job makes a great mistake, jeopardizing not only himself but every man in the mine. No excuse can be offered for a miner persistently disobeying orders and instructions.

Statistics show a large percentage of accidents, both fatal and non-fatal, are due to disobeying instructions. A foreman's rule should be: Tell a man once and the next time send him out of the mine. A safe miner will generally prove an efficient miner; and the mine that holds a minimum accident record will generally hold also a maximum production record. Many, indeed, are the requirements of the safe and efficient miner. I have mentioned but a few of the more prominent ones.

Thomas, W. Va.

BEN.

Inquiries Of General Interest

Mining the Coal Before Blasting

Proper Mining of Coal Before Blasting Demands That the Cutting, Whether Placed at the Bottom, Center or Top of the Seam or at One Side, Shall Be Extended to a Depth at Least Equal to the Depth of the Hole to Be Charged

MUCH interest has been aroused here recently, regarding the meaning of the words "properly mined," as used in the Bituminous Mine Law, of Pennsylvania, where the law specifies how coal may be blasted in mines (Art. 4, Sec. 9).

We have debated this question at considerable length, and find that there is much difference of opinion regarding the meaning of these words. Not being able to reach a satisfactory conclusion, it was decided to submit the question to *Coal Age* and its readers, for their opinions.

The bituminous law (Art. 4, Sec. 9) reads in part as follows:

The mine foreman shall direct that the coal is properly mined before it is blasted. "Properly mined" shall mean that the coal shall be undercut, centercut, topcut, or sheared, by pick or machine, and in any case, the undercutting shall be as deep as the holes are laid.

In mines generating explosive gas in quantities sufficient to be detected by an approved safety lamp, when the coal seam is 5 ft. 6 in. or more in thickness, "properly mined" shall mean that in all entries less than 10 ft. wide, wherein the coal is undercut, it shall also be sheared on one side as deep as the undercutting before any holes are charged and fired, or the coal shall be blasted in sections by placing the first hole near the center of the coal seam.

Again, Sec. 10 of the same article reads as follows, regarding the blasting of coal:

The mine foreman or the assistant mine foreman, under instructions from the mine foreman, shall direct that the holes for blasting be properly placed and shall designate the angle and depth of hole, which shall not be deeper than the undercutting, centercutting, topcutting or shearing, and the maximum quantity of explosives required for each hole, and the method of charging and tamping.

In debating the meaning of the expression "properly mined," some have taken the meaning in Sec. 9 to be that coal that is sheared, topcut or centercut must also be undercut as deep as the hole to be blasted.

Others have drawn attention to the fact that Sec. 10 does not mention that, "in any case, the undercutting shall be as deep as the holes are laid," as does Sec. 9. We shall be glad to learn the opinions of *Coal Age* and others, in this regard.

MINE FOREMAN.

Timblin, Pa.

It would seem that the difference of opinion that arose in debating this question was probably due to assuming that the reading of Sec. 9 requires that the coal be undercut after being either centercut, topcut or sheared. In the opinion of the editor, this is not the meaning intended to be conveyed.

The intended meaning, as we understand the law, would have been made clearer had the section read as follows: The coal shall be undercut, centercut, topcut, or sheared, by pick or machine; and, in any case, the cutting shall be as deep as the holes are laid.

The meaning is evidently that whether the cutting be at the bottom, center, top or side of the seam, it shall be at least as deep as the hole is bored. In other words, a drillhole for blasting must not extend beyond the depth of the cutting, so that there will be no danger of the charge being laid on the solid. The same meaning is expressed in the quotation from Sec. 10.

Depth of Water in Airway When Half-Full

An airway having the form of a trapezoid is half-filled with water when the latter stands at a depth less than the half-height of the airway.

RECENTLY a problem was sent over to the mine from our High School. It drifted around from one to

another and finally came to me for solution. After several trials, I decided to seek the help of *Coal Age*, as I did not care to send it back on a guess. The problem is as follows:

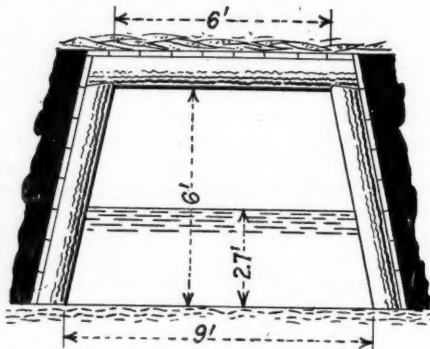
A mine airway 6 ft. in height has a width of 6 ft. at the top and 9 ft. at the bottom, as indicated in the accompanying figure. It is desired to find the depth at which the water will stand in this entry when the place is half-full.

STUDENT.

Piedmont, W. Va.

The cross-section of this airway is a trapezoid and its area is found by multiplying the average width of the passage by its height. The average width is the half-sum of the top and bottom widths, or $\frac{1}{2}(6 + 9) = 7\frac{1}{2}$ ft. The sectional area is, therefore, $6 \times 7\frac{1}{2} = 45$ sq.ft. The sectional area of the water, when the airway is half-full is, therefore, $\frac{1}{2} \times 45 = 22\frac{1}{2}$ sq.ft.

Now, let x equal the required depth of the water when the airway is half-full. The width, measured at the surface of the water, is $9 - \frac{1}{2}x$, because the width decreases 1 ft. in every two feet of height. But, the average width of the wetted cross-section, being the half-sum of the top and bottom widths of that section, is $\frac{1}{2}(9 + 9 - \frac{1}{2}x) = 9 - \frac{1}{4}x$; and, multiplying this aver-



age width by x , the depth of the water, gives the sectional area of the wetted cross-section $9x - \frac{1}{4}x^2$.

Finally, equating this expression with the area of the water when the airway is half-full ($22\frac{1}{2}$ sq.ft.), previously found, gives $9x - \frac{1}{4}x^2 = 22\frac{1}{2}$. Multiplying throughout by -4 , to clear of fractions, we have,

$$x^2 - 36x = -90$$

Now, adding to each side of the equation, the square of half the coefficient of x , or $18^2 = 324$, gives:

$$x^2 - 36x + 18^2 = 324 - 90 = 234$$

Then, extracting the square root of both members gives,

$$x - 18 = \pm\sqrt{234} = \pm 15.3$$

$$x = 18 - 15.3 = 2.7 \text{ ft.}$$

Therefore, the required depth of the water when the airway is half-full is 2.7 ft. It must be remembered that the square root of a number may be either plus or minus, since the squaring of either of these values gives a positive value. In this case, the positive value would give a result $18 + 15.3 = 33.3$ ft., which would be greater than the height of the airway and is therefore observed.

Examination Questions Answered

Examination, Foremen and Assistant Foremen, Twentieth Anthracite District

(Selected Questions)

QUESTION—*What are the requirements of the mine law in regard to charging holes in coal and rock, for blasting?*

ANSWER—Art. 12, Rule 30 of the anthracite law forbids the use of an iron- or steel-pointed needle, in blasting slate or rock in any mine; neither shall the hole be tamped with an iron or steel tamping bar, unless the end of the bar is tipped with at least six inches of copper or other soft metal.

QUESTION—*When a charge misses fire what are the provisions of the mine law?*

ANSWER—Art. 12, Rule 31 forbids withdrawing a charge of powder or other explosive that has been fired, or reopening the hole.

QUESTION—*What must a miner do to perform his duty after blasting in coal or rock?*

ANSWER—Art. 4, Rule 34 makes it the duty of a miner working a breast or other place in a mine, after firing a shot, to examine the condition of the place before permitting his laborer or assistant to approach the face.

QUESTION—*What is the duty of a workman when gas becomes ignited in his place?*

ANSWER—Art. 12, Rule 38 requires that the person who fires a blast by which gas is ignited must at once extinguish the gas, if that is possible, and then notify the mine foreman or his assistant. The miner must see that no gas blowers are left burning when leaving his working place.

QUESTION—*Who shall be employed in a mine evolving explosive gases?*

ANSWER—Art. 12, Rule 56 forbids the employment of any person who is not competent to understand the regulations of the mine. This rule, however, does not apply to any section of the mine that is free from gas.

QUESTION—*How would you conduct your examination of a gaseous mine to ascertain its true condition?*

ANSWER—Having carefully examined and prepared the safety lamp to my satisfaction, and having examined the ventilating fan and ascertained that it was working properly, I would proceed to the head of the shaft, examine the ropes and cages, safety gates and other hoisting equipment. This would include a visit to the engine room, where I would have a few words with the engineer in charge and observe his handling

of the engine. After seeing a few trips of coal hoisted, I would ask for an empty cage and request to be lowered slowly in the shaft, in order that I might have opportunity to examine its condition from top to bottom.

Arriving at the bottom of the shaft, I would tarry a few moments to "get my eyes" and have a little conversation with the men on the shaft bottom, observing the equipment there and the method in which the work was being performed. From the shaft bottom I would proceed at once to the main intake air-course or bottom of the down-cast shaft and measure the quantity of air passing into the mine. This done, I would follow the air current, observing the condition of the airways as I went. On reaching the mouth of a split or section of the mine, I would follow this split of air to the working face in that section, and then proceed to examine each working face in order, following the air out to the return airway. In the same manner I would proceed to examine each section of the mine, measuring the air at the mouth of each split and at the inside crosscut. This would enable me to judge of the condition of the stoppings throughout the mine, by ascertaining how much air fails to reach the head of the entries.

In my examination, I would make frequent tests for gas and observe carefully the condition of the timbering in each working place, in order to see that no one was working under unsafe conditions. I would also give particular attention to electric installations, the methods employed in blasting coal and rock and the tools and other equipment in use. This would include a careful examination of the haulage system throughout the mine. Having completed the examination of the mine and returning to the surface, I would enter a full report of my examination, in the book kept for that purpose, making such recommendations as seemed advisable.

QUESTION—*What is the weight of a cubic foot of anthracite coal having a specific gravity of 1.55?*

ANSWER—Taking the weight of a cubic foot of water as 62.5 lb., the weight of the same volume of anthracite coal having a specific gravity of 1.55 is $1.55 \times 62.5 = 96.875$ lb.

QUESTION—*Describe a modern safety lamp and its requirements?*

ANSWER—A modern safety lamp is one having a pressed-steel or brass

oil vessel equipped with a round-wick burner and an efficient pricker or other means of raising or lowering the wick. The lamp should be designed to burn a safe non-volatile oil, in preference to a highly volatile oil requiring special equipment for its safe handling. The oil vessel is surmounted by a strong glass cylinder and a gauze chimney having one or two conical gauzes surrounded by a steel or sheetiron bonnet. The construction is such that the air enters the combustion chamber of the lamp through gauze-protected openings, at a point below the flame, the circulation within the lamp being ascensional.

The requirements of a good working lamp are the following: 1. Simplicity of construction. 2. Safety in strong currents. 3. Good illuminating power, and the flame set in the lamp so as to throw the light upward and downward at a wide angle. 4. The lamp should not be too sensitive to gas, flaming readily and being too easily extinguished in gas.

The requirements of a good testing lamp are as follows: 1. Simplicity of construction. 2. Safety in moderate currents. 3. Designed to burn a non-volatile oil that will give a uniformly accurate indication of the percentage of gas present. 4. Circulation within the lamp wholly ascensional. 5. Equipped with a sight indicator or other means of measuring the height of flame cap, or indicating the percentage of gas present and avoid guessing. 6. Free discharge openings at the top of the chimney, thereby providing a free circulation so that the condition within the combustion chamber will fairly represent that of the air outside.

QUESTION—*A dam is constructed in a tunnel and that portion of the mine is allowed to fill with water, the head of water being 200 ft. If the tunnel is 12 ft. wide at the bottom, 8 ft. wide at the top and 10 ft. high, what is the total pressure, in pounds, on face of dam?*

ANSWER—The pressure due to a head of 200 ft. of water is $200 \times 0.434 = 86.8$ lb. per sq.in. The average width of the dam is $\frac{1}{2}(8 + 12) = 10$ ft., and the surface pressed by the water $10 \times 10 = 100$ sq.ft. The total pressure on the face of the dam is then $100 \times 86.8 = 8,680$ lb.

QUESTION—*A duplex pump, having a water-end 12 in. in diameter and a 4-ft. stroke, is running at a speed of 70 strokes a minute. Give the number of gallons per minute the pump will handle, and the number of gallons and weight of water in tons discharged in 24 hours.*

ANSWER—The piston displacement, per stroke, of this pump is $4(0.7854 \times 12^2) \div 144 = 3.1416$ cu.ft. Assuming 7.48 gal. per cu.ft. and a water-end efficiency of 85 per cent, the quantity of water handled per minute is $0.85(70 \times 3.1416 \times 7.48) = 1,398+$, say 1,400 gal. In 24 hr. the pump will discharge $24 \times 60 \times 1,400 = 2,016,000$ gal.

The weight of this water, assuming 12 gal. per hundred pounds, or 240 gal. per short ton, is $2,016,000 \div 240 = 8,400$ short tons.



Foreign Markets and Export News



Output of Upper Silesian Collieries Improved During February

Special Correspondence to *Coal Age*, Berlin, March 11, 1921

Output of Upper Silesian Collieries during February showed further improvement, the average daily tonnage raised amounting to 122,257 tons. The total production is given at 2,811,904 tons for 23 working days comparing with 2,821,820 tons for 24 days in January.

Exports were 708,000 tons, as against 665,000 tons in January. The chief exports were:

Poland.....	264,804
Austria.....	170,865
Czecho-Slovakia.....	137,247
Italy.....	96,196
Hungary.....	17,705
Danzig.....	11,672
Memel.....	3,639

Quotations on the Netherlands market in the middle of March, 1921, were as follows:

DUTCH COAL

Non-bituminous fine coal.....	15.00 florins per ton ex colliery
Anthracite nuts No. I.....	32.50 florins per ton ex colliery
Anthracite nuts No. II.....	38.00 florins per ton ex colliery
Anthracite nuts No. III.....	34.00 florins per ton ex colliery
Anthracite, large.....	22.00 florins per ton ex colliery

ENGLISH COAL

Flaming nuts, Nos. I and II.....	30.00 florins per ton f.o.b. Rotterdam
Flaming nuts No. III.....	29.00 florins per ton f.o.b. Rotterdam

SCOTTISH COAL

Large coal.....	29.50 florins per ton
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Output in January 24 working days 2,821,820 tons Output per day in January 117,570 tons	Output in February 23 working days 2,811,904 tons Output per day in February 122,257 tons
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Last year's monthly average was 2,600,000 tons, in 1919 it was 2,160,000 tons, and in 1913, the best year of Germany's coal production, 3,620,000 tons.

Transportation was satisfactory. Of 210,000 trucks required, a shortage of 2,000 was reported. The stock of dumped coal was reduced to 352,000 tons.

Czecho-Slovakian Coal Output During 1920 Was 82 Per Cent of That of 1913

Exact figures covering Czecho-Slovakian coal production and exports during the year 1920 are now at hand, showing that output has reached 82 per cent of the 1913 figure. The amount raised during 1920 totaled 30,820,000 tons, as compared with 27,300,000 tons during 1919, of which 11,300,000 tons were bituminous coal (10,380,000 tons and 14,570,000 tons in 1919 and 1913, respectively) and 19,690,000 tons lignite (17,110,000 tons in 1919 and 22,600,000 tons in 1913). The share in tons of the various districts in the total output may be seen from the following table:

BITUMINOUS COAL

	1920	1919	1913
Ostrau.....	7,480,000	6,800,000	9,800,000
Rositz.....	390,000	380,000	510,000
Kladno.....	1,900,000	1,800,000	2,500,000
Pilsen.....	900,000	1,000,000	1,300,000

LIGNITE

Bruex.....	14,770,000	13,100,000	18,500,000
Falkenau.....	4,400,000	3,700,000	4,100,000
Slovakia.....	200,000	150,000	200,000

Coke production is given at 1,470,000 tons in 1920; 1,390,000 tons in 1919 and 2,560,000 tons in 1913, while the re-

spective figures for briquets are 160,000 tons and 70,000 tons. Subjoined are the export figures for the various countries:

EXPORTS OF COAL FROM CZECHO-SLOVAKIA (In Metric Tons)

	1920	1919
Pit coal.....	1,134,124	1,068,335
Lignite.....	3,426,851	2,686,217
Coke.....	273,650	188,621
Briquets.....	52,158	.....

DESTINATION OF EXPORTS

	Pit Coal	Lignite	Coke	Briquets
Germany.....	28,000	2,368,000	.....	40,000
Austria.....	522,000	1,059,000	142,000	12,000
Poland.....	570,000	.....	4,000	.....
Jugo-Slavia.....	7,000	.....	4,000	.....
Hungary.....	5,000	.....	5,000	.....
Roumania.....	1,000	.....	4,000	.....
Italy.....	.....	.....	1,500	.....

Better Demand for Steamers; South American Freight Rates Stiffen

Demand for export bottoms increased during the week ended March 28, according to W. W. Battie & Co.'s weekly coal trade freight report for that date. There was little change in the freight situation, however, with the exception of rates to the West Coast of South America, which have advanced considerably owing to the dearth of commercial business. Freight rates by steamers were quoted as follows:

	March 21, 1921	March 28, 1921	Tons Discharged Daily
Malmö.....	About \$5.75	About \$5.75	1,000
Copenhagen.....	5.50/ 5.75	5.50/ 5.75	1,000
Stockholm.....	About 6.25	About 6.25	800
Gothenburg.....	About 5.75	About 5.75	1,000
Antwerp/Rotterdam.....	3.75/ 4.00	3.75/ 4.00	1,000
Hamburg.....	About 4.75	About 4.75	1,000
Fr. Atlantic.....	About 4.35	About 4.35	700
ex Rouen			
Lisbon.....	About 5.00	About 5.00	700
Algiers.....	About 5.25	About 5.25	800
West Italy.....	5.00/ 5.50	5.00/ 5.50	1,000
Marseilles.....	5.00/ 5.50	5.00/ 5.50	1,000
Piræus.....	About 6.50	About 6.50	1,000
Trieste/Venice.....	About 6.50	About 6.50	1,000
Port Said.....	About 6.00	About 6.00	1,000
Alexandria.....	About 6.00	About 6.00	1,000
Constantinople.....	About 6.75	About 6.75	500
Gibraltar.....	About 5.00	About 5.00	1,000
Teneriffe.....	About 5.50	About 5.50	500
Pernambuco.....	About 6.50	About 6.35	500
Bahia.....	About 6.50	About 6.35	500
Rio.....	5.75/ 6.00	5.75/ 5.85	750
Santos.....	6.50/ 7.00	6.50/ 7.00	450
Buenos Aires or La Plata or Montevideo.....	5.75/ 6.00	About 5.85	500
Para.....	About 6.50	About 6.35	500
Rosario.....	6.50/ 7.00	About 6.35	750
Nitrate Range.....	About 5.50	About 6.75	500
Havana.....	2.25/ 2.50	2.00/ 2.25	500
Sagua.....	About 2.75	About 2.75	300
Cienfuegos.....	2.75/ 2.85	2.75/ 2.85	400
Caibarien.....	About 3.00	About 3.00	300
Guantanamo.....	About 2.75	About 2.75	500
Manzanillo.....	About 3.25	About 3.25	300
Bermuda.....	About 3.25	About 3.25	300
p.c. and dis. free			
Kingston.....	About 3.00	About 3.00	400
Barbados.....	About 3.25	About 3.25	500
St. Lucia.....	About 3.25	About 3.25	500
Santiago.....	About 2.75	About 2.75	500
Port of Spain.....	About 3.25	About 3.25	500
Curacao.....	3.00/ 3.25	3.00/ 3.25	500
Curacao free p.c.			
St. Thomas.....	3.00/ 3.25	3.00/ 3.25	500
Vera Cruz or Tampico.....	3.25/ 3.50	3.25/ 3.50	500

N. B.—The above rates to East Coast, South American ports, are based on Welsh form. We would quote considerably less on July form.

All above rates gross form charter

ITALY IS NEGOTIATING with a group of American capitalists whereby coal and other raw materials to the value of \$50,000,000 will be advanced, repayable in five years at 6½ per cent, it is reported.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

CONTINUED decline in employment is indicated in a survey made by the U. S. Employment Service of the Department of Labor, which compares conditions of March 31 with those on the last day of February. Telegraphic returns show that 1,424 firms in 65 industrial centers had employed on March 31 1,587,786 workers, a decrease of 24,825 or 1.5 per cent, compared with February 28, and 40,348, or 2.5 per cent, compared with Jan. 31. In March, as in February, the largest decrease was in the iron and steel industry. Other industries recording material decreases were metals and metal products, paper and printing, and food products. Increases were recorded in the automobile, tobacco and leather industries. Geographically the changes for better or for worse are indicated for the 65 cities on the accompanying map. This survey coupled with the most recent information of cars of freight loaded on the railroads, which for the week ended March 26 showed a reduction of 5 per cent compared with the preceding week, of 24 per cent compared with the corresponding week in 1920, and of nearly 3 per cent compared with the corresponding week of 1919, indicates that little or no progress was made in March in the revival of business. Notes on local conditions at some of the more important districts, as reported by the agents of the U. S. Employment Service, follow.

New York Reports Ups and Downs

A survey of trade in New York City shows improvement in the shoe and leather industries. The wholesale paper trade is reported to be improving, and while the mills are still working on part time increased employment is looked for in the future. Metals and metal products are reported very quiet, including hardware, metal novelties and automobile parts and accessories. There

is a general reduction of forces in the transportation lines, steam and electric.

Improvement in San Francisco

Conditions in San Francisco generally show some improvement and sentiment is more hopeful. The unemployment situation has not materially changed during the past month excepting that there has been some demand for unskilled labor.

Textile Trade Stimulus Fails

There is much unemployment and part time employment in Massachusetts in all lines. The effort to stimulate business by reducing prices on goods for fall delivery seems to have failed. Paper mills are complaining of serious curtailment of orders. Foundries and machine shops are operating at less than 25 per cent normal. Shoe business is on a 75 per cent basis with other lines better. It is expected that the next few months will show marked improvement.

Business Reviving in Minnesota

Business is improving in Minnesota. It is largely a seasonal increase and so far has been felt principally in agricultural equipment lines, automobiles and supplies, and road machinery. One large foundry has reopened giving employment to more than 200 men. The railway contract repair shops are running at a maximum.

Motor Trade in Ohio Gains

In Ohio the motor industries with perhaps one exception are in the generally better condition characteristic of the automotive group. A contemplated \$42,000,000 steel merger will affect three of the largest corporations in Canton if consummated. Tire sales are increasing but factories are still far under production capacity on reduced scale of operation.

Building Picks Up in Detroit

Reports of extensive building programs continue to issue from Detroit. About 5,500 motor cars daily are now being turned out in the Detroit area. Although production is only a little ahead of the demand, manufacturers regard the situation as indicative of permanent improvement and are adding to forces daily.

INDUSTRIES REPORTING A DECREASE IN EMPLOYMENT IN MARCH, 1921

Industry	Amt. of Dec.	P.c. Dec.	Weight*
Iron, steel and other products.....	26,979	6.5	24.2
Miscellaneous.....	16,311	4.9	19.8
Metals and metal products other than iron and steel.....	3,605	4.5	4.8
Paper and printing.....	1,467	2.8	3.2
Food and kindred products.....	3,692	2.7	8.3
Stone, clay and glass products.....	409	2.7	0.9
Chemicals and allied products.....	1,560	1.8	4.9
Textiles and their products.....	4,312	1.7	15.0
R.R. repair shops.....	1,055	1.7	3.7
Total.....	59,390		

INDUSTRIES REPORTING AN INCREASE IN EMPLOYMENT IN MARCH, 1921

Industry	Amt. of Inc.	P.c. Inc.	Weight*
Vehicles for land transportation.....	31,342	28.1	8.9
Tobacco manufacture.....	2,379	8.5	1.9
Leather and its finished products.....	744	1.7	2.7
Liquors and beverages.....	8	0.4	0.1
Lumber and its manufacture.....	92	0.3	1.5
Total.....	34,565		

* Per cent employed March 31 to total reported in 14 groups.



Changes in employment in 65 cities, March 31, compared with Feb. 28, 1921, as compiled by the U. S. Employment Service

Coal Consumed in Production of Electric Power, by States, in Net Tons

PRODUCTION of electricity by public utility plants in January indicates that the decline in the demand for electricity shown in December continued during January. The mean daily output for the month, according to the Geographical Survey, was 114,880,000 kilowatt-hours. This is about 8 per cent less than that for January, 1920, and is less than that for any month during 1920.

Thirty-eight per cent of the total kilowatt-hours generated during the month was produced by water power. This is an increase of 5 per cent as compared with January, 1920, and probably was due to better water supply at water-power plants owing to the mild winter.

Electric power produced during October, November and December, 1920, and January, 1921, required combustion of coal indicated by the following figures, representing net tons:

State	October	November	December	January
Alabama	31,093	32,441	12,993	8,839
Arizona	777	693	596	626
Arkansas	11,814	11,799	14,160	11,522
California	0	0	0	0
Colorado	35,264	36,750	38,695	32,452
Connecticut	60,693	60,561	56,875	56,183
Delaware	9,425	11,106	11,390	9,106
District of Columbia	20,548	21,304	22,239	21,703
Florida	2,680	3,017	2,773	2,197
Georgia	10,418	9,818	8,175	8,184
Idaho	0	25	0	0
Illinois	369,952	386,365	408,638	376,062
Indiana	181,981	183,769	184,367	171,957
Iowa	84,439	87,337	92,077	91,664
Kansas	39,553	47,436	45,816	43,395
Kentucky	41,917	43,675	44,756	43,197
Louisiana	13,970	12,237	13,439	13,198
Maine	373	491	398	51
Maryland	37,108	31,091	28,140	25,559
Massachusetts	122,895	119,140	120,872	115,489
Michigan	144,516	130,018	132,342	118,472
Minnesota	50,763	52,546	61,258	58,124
Mississippi	13,093	12,872	12,650	12,443
Missouri	107,868	105,504	125,687	110,718
Montana	3,710	4,033	4,036	3,770
Nebraska	39,566	41,868	43,677	41,720
Nevada	296	237	243	221
New Hampshire	3,781	3,631	3,492	3,527
New Jersey	132,180	123,462	134,285	116,608
New Mexico	3,430	3,565	4,028	4,129
New York	408,565	412,673	420,593	388,373
North Carolina	21,929	20,936	19,326	19,435
North Dakota	15,539	17,432	18,993	16,739
Ohio	330,844	346,022	334,569	275,376
Oklahoma	9,182	9,311	9,166	8,611
Oregon	150	156	155	165
Pennsylvania	481,647	476,145	476,420	446,443
Rhode Island	20,535	16,727	15,776	13,843
South Carolina	10,584	10,449	9,752	9,301
South Dakota	7,835	7,809	8,190	7,823
Tennessee	26,001	25,639	24,103	23,422
Texas	18,223	18,590	20,259	20,286
Utah	0	50	8	11
Vermont	278	439	468	193
Virginia	47,265	43,551	39,120	38,425
Washington	2,841	3,560	4,239	3,583
West Virginia	102,212	99,412	97,326	85,359
Wisconsin	81,942	72,151	68,655	70,523
Wyoming	9,406	9,347	13,158	9,189
Totals	3,169,081	3,167,210	3,208,373	2,947,246

Wage Earners' Families Average 4.5 Persons

ONE of the contentions of the mine workers and their "consulting economist" before the U. S. Anthracite Commission last summer was that the average family in the anthracite regions consisted of 6.5 persons including boarders. Aside from any criticism of the improper inclusion of boarders—a source of revenue—when determining family budgets, this figure is open to attack as exaggerated.

The National Industrial Conference Board, whose investigations at home and abroad have been marked for their thoroughness and conservatism, has just issued a brief summary of an investigation into the size of wage earners' families. This summary is contained in Service Letter No. 54, issued by the board under date of March 7.

It has been customary to consider the "normal family," for budget determining purposes, as five persons—a man whose earnings are the only source of income, his wife, and three children under fourteen years old. The board's inquiry points to these conclusions:

Families in this country average 4.5 persons. This includes boarders, lodgers, servants and other dependents.

Families in which the father is the only wage earner,

and in which all the children are under fourteen, comprise less than half of all the wage earners' families.

Families in which the father is the only wage earner, and in which the children are under fourteen, average closer to four persons per family than to five persons.

Families of five or more persons in most cases have other sources of income than the earnings of the father. This income may come from boarders or from the labor of the mother or of the children.

The board is now studying family budgets to bring out other phases of the question, particularly the standard of living.

Mine Ratings on Morgantown & Wheeling Ry.

FOLLOWING is a list of operators, mines and ratings on the Morgantown & Wheeling Ry. as of Feb. 10, 1921:

OPERATING MINES		Cars per Day
Randall Coal Co.	Randall Mine	14
Jarvis Coal Co.	Jarvis Mine	8
Hickman-Miller Coal Co.	Baby Mine	4
Clinton Coal Co.	Clinton Mine	18
Osage Coal Co.	Osage Mine	20
Chaplin Collieries Co.	Louise Mine	8
Virana Coal Co.	Virana Mine	20
Clev. & Morg. Coal Co.	No. 1 Mine	12
Purseglove Coal M. Co.	No. 4 Mine	12
South Penn Coal Co.	South Penn	10
Anchor Coal M. Co.	Anchor Mine	27
Clev. & Morg. Coal Co.	No. 2 Mine	12
Soper-Mitchell Coal Co.	Mammoth Mine	8
Greenmont Fuel Co.	Greenmont	16
Soper-Mitchell Coal Co.	Berry	16
Diamond Coal Co.	Liberty	16
Davis Coal Co.	Davis No. 1	5
Gustin Coal Co.	Gustin	10
Davis Coal Co.	Davis No. 2	6
Gilbert Fuel Co.	Gilbert	7
Higgins Coal Co.	Higgins	2
Maxwell Coal Co.	Moser	245
MINES UNDER DEVELOPMENT		
Sesamine Coal Co.	Sesamine	2
By-Product Coal Co.	Golden	4
Lee R. Coal Co.	Jere	5
Forest Coal Co.	Forest	5
Oak Hill Coal Co.	Oak Hill	4
Barbar Coal Co.	Barbara	2
Cass Hill Coal Co.	Cass Hill	3
Chaplin Collieries Co.	Virginia	2
Bingamon Valley Coal Co.	.....	1
		28
		273

Marine Corps Asks Bids on Bituminous Coal; Proposals To Be Opened April 25

THE Quartermaster's Department, Washington, D. C., announced April 2 that it would receive sealed proposals in duplicate until 11 a. m., April 25, 1921, for furnishing the Marine Corps the following approximate quantities of coal during the fiscal year 1922, for the following deliveries: 4,000 tons run-of-mine, Philadelphia, Pa.; 6,000 tons run-of-mine, Quantico, Va.; 15,000 tons run-of-mine and 4,000 tons domestic lump, Paris Island, S. C.; 400 tons run-of-mine, Norfolk, Va.; 175 tons Virginia anthracite stove and 100 tons run-of-mine, Charleston, S. C.; 150 tons domestic lump, Pensacola, Fla., and 120 tons domestic lump, New Orleans, La.; all bids f.o.b. mines.

Proposal blanks and other information may be obtained upon application. The right is reserved to reject any or all bids or parts thereof and to waive informalities therein. Bids from regular dealers only will be considered.

Philadelphia & Reading Coal & Iron Co. Gets Government Contract

THE Philadelphia & Reading Coal & Iron Co. has been awarded a contract by the Bureau of Mines for supplying the Government Fuel Yard with coal during the year beginning April 1. The contract covers f.o.b. mine prices as follows: 7,800 tons white ash furnace and 8,800 tons white ash egg at \$7.75 per gross ton each; 8,200 tons white ash stove and 1,700 tons white ash chestnut at \$8.05 per gross ton each; 2,600 tons white ash pea at \$6.40 per gross ton and 480 tons red ash stove at \$8.55 per gross ton.

British Coal Strike Rapidly Nearing Settlement

SO LONG as the temper of the British workingmen and of the public was in doubt no assurance could be felt as to what would be the outcome of the British coal strike. It must be confessed that for a while the prospects looked decidedly glum. The mine workers' leaders were positive that they had the support of the majority of the British electorate, and Arthur Henderson, the most powerful labor leader during the war, felt sure during the uncertain early period of the strike that the Lloyd George government would be upset in the course of the struggle. On April 4 he attacked the government for "insincerity, inconsistency and inconstancy." It was regarded as significant that at widespread sectional meetings of railway and transport workers it was urged that the leaders of the "Triple Alliance" support the mine workers by any action they might deem necessary.

On April 5 rioting broke out at the Harthill collieries, near Cowdenbeath, in Fifeshire, Scotland. Strikers and others raised the red flag, besieged the police station and captured the under-manager of the mine, who refused to cease manning the pumps. The police responded to a call for aid and rescued the man, but the rioters wrecked the plant and drove away the pumpers, thus making inevitable a flooding of the mine. It was feared that twenty-five ponies left below would be drowned. Other outbreaks occurred in South Wales, in Lanarkshire and the east of Fife. The Cabinet feared to act lest the public take umbrage, and the workmen took advantage of the indecision of the government.

On April 6 Premier Lloyd George made an offer of mediation but he was adamant in his demand that the question should not be subjected to the slow processes of conciliation till the mine workers ordered the mine "safety men" to return to work. The mine workers refused to make this concession and the effort at mediation failed.

Lloyd George used all his eloquence when he met the mine workers on April 7. He declared "There'll be nothing more left here than there is in Russia if you destroy industry" and pointedly asked "Where will the miners go if Britain becomes only a home for cultivators of the soil?" He added, "It is not flooding of the mines you are doing, it is flooding the nation's industries. This is an industrial country. If it ceases to be industrial, it is destroyed."

RAILWAY MEN AND TRANSPORT WORKERS ORDERED OUT

April 8 was really the culminating point in the trouble, when the situation took on the blackest garb. On that day the officers of the railway men and transport workers ordered all their followers to quit work at midnight on Tuesday, April 12, in sympathy with the mine workers. They stated that the strike was to take effect without further warning unless negotiations between the miners and the government were reopened. The King's Ministry issued a royal proclamation declaring that a national emergency existed and calling out army and navy reserves for immediate active service. The Premier issued a call for volunteers to enter a civilian army to be known as the Defense Force.

The "new poor" (those who have been impoverished by the continued high wages of certain classes of workers and the high cost of living thereby resulting), the "salaried" (those whose pay is in the form of a salary) and the "middle class union" (which believes in fighting one union by another)—three classes grading into one another and overlapping—gradually became stronger with each development in the situation and rallied round the government, so that in a few days the Cabinet was so sure of its position that it began to talk of resigning next June in order more strongly to establish itself in power by a general election.

This action was reinforced by the declaration of many of the railroad men that the action taken by their leaders was ill-advised, especially in view of the fact that it had not been submitted to the rank and file. The National Association of Colliery Deputies, which is strong in the Midlands, decided to send the safety men back to work, and branches of the miners' union in Nottinghamshire and Staffordshire began negotiations with the mine owners at about

this time, when violence apparently had reached its height.

Beginning about April 5 large bodies of troops were assembled in Kensington Gardens and Hyde Park, which is located in the better part of London. Apparently these parks were chosen because the soldiers could assemble there without unnecessarily exasperating the population. As soon as they were ready for service they were dispatched to various parts of the coal fields. Two hundred Royal Marines also were sent to the mines. These men will protect those willing to work. They will not be asked to pump the mines, as the government is averse to using soldiers and sailors for that purpose.

Finally on April 9 the following agreement was made by the Cabinet and the Negotiations Committee of the railway men and transport workers:

(1) The government shall summon a conference of representatives of the Miners' Federation and the coal owners to meet at the Board of Trade on Monday, April 11, at 11 a.m., to discuss all questions in dispute between the parties.

(2) The Miners' Federation shall tonight issue notices to the branches of the Federation urging their members to abstain from all action which will interfere with measures necessary for securing the safety of the mines or will necessitate the use of force by the government.

On April 10 twenty-three South Wales pits, mainly small ones, were already completely flooded and at Skewen heats colliery a mine fire was reported to be burning.

Colorado Court Upholds Thirty-Day Clause Against Strikes and Lockouts

THE Colorado Supreme Court has upheld the thirty-day notice clause of the state's industrial law. In so doing the court also declared coal mining to be an industry "affected with a public interest." The thirty-day clause protects the public against hasty strikes or lockouts. It not only prohibits a strike before thirty days' notice has been given the State Industrial Commission but it prohibits a wage reduction until after thirty days' notice has been given. Until the commission has investigated and made a finding, neither strike nor lockout nor wage reduction can be put into effect.

The test came after officials of the United Mine Workers had authorized a strike without giving the required notice, and the Governor had obtained a temporary restraining order, late in 1919. The trial court held that coal mining is not affected with a public interest.

Justice Denison, in reversing the decision of the lower court, said: "There can be no question that the production of coal is at the present time affected with a public interest to a certainty and an extent not less than any other industry."

As to the effect upon labor of the provision of the industrial law, the opinion reads: "There is no involuntary servitude under this act. Any individual workman may quit at will for any reason or no reason. There is not even prohibition of strike. The only thing forbidden is a strike before or during the commission's consideration."

Old Tidewater Exchange Contemplates Legal Steps to Collect Outstanding Debts

CREDITORS of the old Tidewater Coal Exchange met with the executive and legal committees on April 1, 1921, to consider how best to collect outstanding debts amounting to \$1,200,000. It was concluded that these unpaid debts cannot be collected except by court proceedings, and the committee of creditors has been authorized by the exchange to employ counsel and proceed immediately in the name of the exchange to collect by suit, if necessary, outstanding amounts due from debtors. Steps will be taken immediately to secure the necessary power of attorney from creditors in order to facilitate the work of the committee and its counsel.

News from the Capital

By
Paul Wootton



Navy Awards Bituminous Contracts to Four Firms; Three Still to Be Awarded

FOUR companies were awarded bituminous coal contracts by the navy this week, as follows:

Quemahoning Coal Co., Somerset, Pa., 700 tons for Greenbury Point, Md., at \$7.35 a ton.

L. A. Snead, Washington, D. C., 5,300 tons for Norfolk; 600 tons for Portsmouth, Va., and 1,250 tons for Alexandria, Va., at \$3.85 per ton, f.o.b. mines.

Imperial Coal Corporation, Philadelphia, 300 tons for Cape May and 200 tons for Fort Mifflin, Pa., \$3.82, f.o.b. mines; 12,000 tons for Philadelphia, \$3.60, f.o.b. mines.

Dexter & Carpenter, New York, 600 tons, Annapolis, Md., \$8.11; also 15,000 tons for Annapolis at \$7.11.

Bids on 40,000 tons for the South Charleston, W. Va., armor plate plant will be held up indefinitely, while bids will be readvertised for 900 tons at Yorktown, Va., and 2,500 tons for Baltimore, as previous bids were unsatisfactory.

THE STATISTICAL WORK being done by the National Coal Association and by the local associations affiliated with it was the subject of a conference in Washington April 7 and 8 attended by a large number of the secretaries of the local associations. As a result of the extended discussions changes will be made which will simplify the work and eliminate duplications. This is expected to reduce the cost of statistical activities without reducing the amount of information gathered.

Some question had been raised as to the action of the national association in calling upon individual members for statistical data. It was pointed out that this was done only in cases of emergency when sufficient time was not allowed to collect the data through each local secretary. It was decided at the meeting, however, that it would rest with the local secretary to decide how the national association should obtain figures from the members of local associations. Some of the associations lack the machinery for collecting all of the information which is desired by the Bureau of Coal Economics of the national association.

ARRANGEMENTS HAVE BEEN COMPLETED for the use of the Washington Hotel as headquarters for the convention of the American Wholesale Coal Association, which will be held in Washington June 7 and 8. The banquet will be held the night of June 7. After the final meeting, on June 8, a boat trip to Mount Vernon will be taken. The executive committee and former officers of the association will hold a meeting at Bethlehem, Pa., April 19 and 20.

THE CONSENSUS OF OPINION in Washington among officials and representatives of the coal industry is that the English strike will have no important bearing on American industry as a whole. Even if the export demand should increase to the capacity of the docks it probably would have little effect on price, it is believed, so long as the mines are capable of greatly expanding the present rate of production. Moreover, it is regarded as certain that the strike must be of comparatively short duration. A national strike that would last six weeks, it is pointed out, would be unparalleled in its consequences.

Attention also is called to the fact that the United States could supply, without appreciably affecting the present sit-

uation, the entire British export trade. The ability of France to get along without American coal has been demonstrated by the practical embargo which has been placed against it. The loss of the imports from Great Britain will not seriously effect France, it is asserted, in the present depressed state of its industries.

THE RAILROAD RELATIONS COMMITTEE of the National Coal Association met in Washington April 5 and discussed the notice given recently by the Interstate Commerce Commission that an investigation is to be made of the distribution of privately-owned cars and cars used for railroad fuel. The committee decided that it would be best for the National Coal Association to take no action at this time. Such action as may be taken is to be decided upon at the next meeting of the Board of Directors, in New York May 18.

PAYMENTS AGGREGATING \$103,946,990.05 had been made to the railroads under the Winslow Act up to and including April 5, the date of the last report.

L. E. Slack Ordered to Confer with Justice Department on Coal Removal Cases

LERT SLACK, special assistant Attorney-General of the United States in the coal conspiracy cases, received notice April 8 to report in Washington April 11 for a conference with Department of Justice officials prior to the hearing on the removal cases filed there and set for hearing. The cases are a part of those included in 226 indictments against coal men returned by the Federal Grand Jury in Indianapolis in February and which resulted in the injunction suit filed in Washington last week by officials of several coal companies and organizations, in which it is sought to prevent the removal of several of the defendants to Indiana for trial. It is presumed that Mr. Slack will aid in the defense of the suits filed in both Washington and Pittsburgh, where a similar suit was filed recently. The indicted firms who are fighting removal in Pittsburgh are the Pittsburgh Coal Co., the Henderson Coal Co., the Carnegie Coal Co. and the Chartiers Creek Coal Co. Hearing is set for April 18.

Panama R.R. Awards Contracts to C. G. Blake Co., Inc., and Pocahontas Fuel Co.

C. G. BLAKE CO., INC., of New York City has been awarded a contract to furnish the Panama Railroad Co. 220,000 tons of New River coal as the result of the opening of bids on March 31. The proposals of the company called for requirements estimated at 700,000 tons, and it was announced at the office of the railroad company on April 9 that the balance of the coal not furnished by the Blake company would be supplied by the Pocahontas Fuel Co.

The bid of the Blake company provided for furnishing 10,000 tons in May and June, and the balance of 200,000 tons in monthly installments, at \$3.36 per gross ton. (See *Coal Age*, April 7, page 642.)

The proposal of the Pocahontas Fuel Co. provided for supplying 360,000 gross tons, navy standard, price to be named by the seller on the 25th of each month, but not to exceed \$4.08 at any time. The company is said to have agreed, however, to make its price \$3.36 per gross ton.

Coal Jobbers Not Opposed to Legislation Safeguarding Consumer, Says Cushing; Price Only Public Interest

THE position of the American Wholesale Coal Association on pending legislation is set forth by George H. Cushing, its managing director, in the following letter to Senator Frelinghuysen:

"You have been so deeply interested in coal, I presume—maybe without warrant—that you will feel disposed to express yourself about it in the forthcoming extraordinary session of Congress. It may interest you, therefore, to have the revised views of the wholesaling group. I have taken advantage of the breathing spell since March 4 to ascertain the sentiment of the members of this association. To that end, I have traveled most of the territory east of the Rockies.

"The great majority of our membership are disposed to say to you:

"(1) We will not resist any proper legislation designed solely to protect the legitimate interest of the public, provided that such legislation does not impair the efficiency of the industry or limit its competition.

"(2) If the government wants to gather information about coal, we will not only not resist any proper compilation but will co-operate gladly, provided this information is intended primarily for use by Congress, or the administrative branch of the government, and provided that any public use made of it shall be designed solely for the benefit of the consumer. While not wishing or intending to withhold any proper data, we doubt the wisdom of bringing all of that information to a focus in a federal bureau or commission, as that has a tendency to tempt such bureau or commission to try to make itself the leader or the regulator of the industry. Therefore, as a matter of good public policy, we probably will recommend that the gathering

of all desired information be decentralized or so combined with data about other industries that the impulse to paternalism is smothered.

"(3) If the government shall decide that it wants to stabilize or try to stabilize the coal industry, we will no longer resist that effort, provided the Congress makes it clear that this is undertaken solely for the benefit of the consumer rather than as a benefit to the miner or the operator. Provided, however, that the government does not, in the matter of price, try to interfere between buyer and seller in the interest of either the buyer or the seller. We want nothing of dividend or price insurance from the government. We oppose any organized effort to interfere with prices—high or low—or with the dividend prospects.

"(4) If the government should decide to try to stabilize the coal industry, and if, to carry the purpose of Congress into effect, it should become necessary for the members of the coal industry to work collectively, we should want the Congress to stipulate that collective action for that purpose only is not in violation of the Sherman anti-trust law.

"(5) We believe that the only public interest in coal is in the price charged for coal. We believe that prices became objectionably high only because an abundant productive capacity in the mines could not result in an abundance of coal at the market because there was insufficient transportation. We believe that the insufficiency of transportation is the direct result of too rigid regulation. Therefore, we believe it would work away from, rather than toward, a solution of the coal problem—as the public views it—if we should try further regulation of the carriers in an effort to effect a regulation of coal."

Indictment Quashed, E. L. Humes Thanks P. C. Madeira For Helping Make Lever Law Effective for Good

INDICTMENTS returned against Madeira, Hill & Co.; Percy C. Madeira and Robert C. Hill; the Haddock Mining Co. and Henry Meeker were quashed in the U. S. District Court of New York on April 7, on motion of Chief George Winship Taylor of the criminal bureau of U. S. Attorney Francis F. Caffey's office. This action was taken on the report of Assistant U. S. District Attorney Maxwell S. Mattuck that the U. S. Supreme Court had declared the "profiteering section" of the Lever Act unconstitutional.

After the indictments had been quashed it was learned that E. Lowry Humes, special assistant to the Attorney General, had written a letter to Mr. Madeira thanking him for his assistance. The letter follows:

"At last the Lever Act is a thing of the past in so far as its criminal features are concerned. The decision of the Supreme Court was no surprise to me and it is probable that you have realized during all of the weeks during which we have been in contact on the anthracite coal situation that I have felt that this act would in the end be declared unconstitutional. It was for this reason that I was especially concerned about adopting some constructive method of securing a compliance with the spirit of the act rather than to undertake to pursue a destructive policy which in the end I felt would avail nothing. I have always been a firm believer in the proposition that a criminal statute should be so clear and plain that every man might know what the law was and what it prohibited.

"Of course, we must recognize that the Lever Act has served a wonderful purpose in this country by impressing upon the people the moral responsibility of the producers and distributors of necessities in a time of stress. It has been my experience in enforcing this law that most men were given to a realization of this responsibility and were

ready to co-operate in making the spirit of the law effective for good.

"I feel that the assistance and co-operation which you gave me in connection with the stabilization of the anthracite coal situation entitled you to better treatment than was accorded you by some of my contemporaries in the government service, whose desire for publicity was greater than their desire to serve the best interest of the public, and I keenly regret that you should have been annoyed and embarrassed as you have been. Of course, the decision of the Supreme Court has vindicated you legally, but I can realize that you still must feel the sting and embarrassment of the personal attacks which have been made upon you in the press.

"I feel under very great obligations to you for the assistance and co-operation which you gave me in the performance of my official duties as a special assistant to the Attorney General in connection with the operating end of the anthracite industry. I sincerely appreciate your most valuable assistance, as well as the assistance and co-operation which I received from many other gentlemen engaged in the anthracite industry, and especially the members of the Fair Practice Committee, of which you were the head. Your services and the service of that committee were invaluable and accomplished much good, and the decision of the Supreme Court has vindicated us in the method which we adopted for meeting the emergency situation which confronted the country and the anthracite industry. I want to thank you personally for your assistance, co-operation and tireless effort in connection with my work, and I would be pleased to have you convey to the other gentlemen of the committee my thanks for their painstaking and valuable service in this connection."

Remove Inequalities in Interstate Freight Rates from Head of Lakes; Virtual Mileage Basis in Effect

THE decision of the Interstate Commerce Commission on case 6194, instituted by the Holmes & Hallowell Co., of Minneapolis, has brought about a rather general revision of interstate rates on coal from the Duluth and Superior docks. The decision practically puts all freight rates upon a mileage basis. The ruling lowers rates to many points in North and South Dakota and in portions of Minnesota. In the western half of Minnesota, however, rates are quite generally raised.

It is impossible to give a definite outline of the effect of the decision without going into detail upon almost every station affected. The net result has been to order that rates shall be based upon the shortest mileage basis possible by physical connection where not more than three railroads are affected. But until it is ascertained whether there is a track connection at a common point, it will not be possible to assume a combination of two or three short hauls to give any single town the advantage of the order.

Certain lines of the Great Northern running east and west across the northern part of Minnesota had maintained interstate rates, because their line looped into Wisconsin and back into Minnesota. The same applied to the Soo Line in the same general locality. On these lines the freight on coal was considerably above the intrastate rate of Minnesota, which was based upon a mileage rate. Crookston, near the western border of Minnesota, is a common point of the Great Northern and the Northern Pacific. The latter, having an all-Minnesota route, had to conform to the intrastate rate. The Great Northern met the competitive rate there as well as at Moorhead, on the boundary line. The Great Northern rates on non-competitive points east from these points, toward a kind of center point upon the line to Duluth, were graduated upward from a basing rate of the competitive station. This resulted in a "hump" of rates in the center, which produced a weird combination, the shorter-haul station by about ten miles having a rate in excess of the station next west—which had benefited by the contiguity to the competitive point—of as much as 60c. These inequalities are to be ironed out by the decision.

NEW ORDER WILL GO INTO EFFECT JULY 6

The order is to become effective July 6. It provides for a distance tariff on hard and soft coal, starting with 80c for each on thirty miles and under, and graduating by ten mile increases up to 400 miles, at which soft coal takes a \$2.85 rate and hard coal \$3. From that distance to 650 miles the rate advances in 25-mile units, with a 10c. advance for each section of twenty-five miles. The new rates do not affect the Twin Cities rates. Ashland and Washburn are placed on the same basis as Duluth and Superior for all roads. These cities are already on the same basis with some roads.

If the effective date of the change remains at July 6 it will add materially to the delays already threatened in getting dock coal forward, for no one will order coal into the interior, where the rate has been lowered, until the new rate is effective. Of course, those points which are to be increased doubtless will rush in their orders ahead of that date. There will be an effort made to induce an earlier change of the rates.

The rates which are instituted are the original Minnesota distance tariff rates plus a 33½ per cent increase granted last season by the Interstate Commerce Commission. The net result probably will be to extend in some degree the territory in which the dock interests can operate in competition with the all-rail trade. The latter will gain in sections where the revision set higher rates from the docks.

Some of the inequalities which are to be removed are the following: Watertown, S. D., 320 miles, interstate rate, \$2.75 while the intrastate rate to Minnesota points of the same distance is \$2; Airlie, Minn., intrastate rate for 328 miles, \$2.20, and Flandrau, S.D., eight miles further, interstate rate, \$2.85; Duluth to Grand Rapids, Minn., 111 miles, rate \$1.10; Cohasset, five miles further, rate \$1.30. In

South Dakota, from Yankton to Janousek, five miles, the rate changes from \$3.15 to \$3.70 and from Janousek to Platte, forty-five miles, the increase is 70c.

C. P. White Retires from the Coal Industry

ANNOUNCEMENT is made of the resignation of C. P. White as vice-president of the Clarkson Coal & Dock Co. and general manager of the Clarkson Coal Mining Co. and his retirement from active interest in Cleveland coal circles. He has been connected with the coal industry for more than thirty years, having left his Ohio home in the '80s to become affiliated with dock interests at the Head-of-the-Lakes. Subsequently he became general manager of



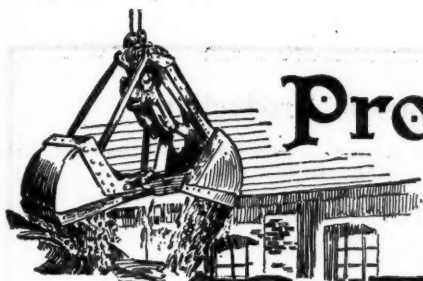
C. P. WHITE

Retiring executive of Clarkson coal interests

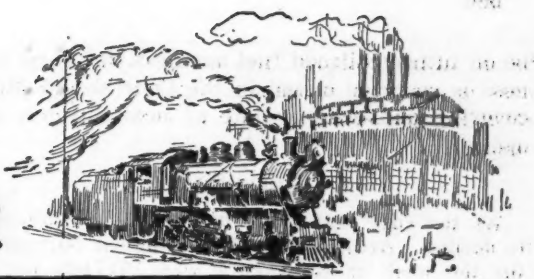
the Pittsburgh Coal Co., in charge of its business north and west of Chicago for a number of years; vice-president of the Carnegie Dock & Fuel Co., Minneapolis, in charge of dock interests in the Northwest for seven years; secretary of the Pittsburgh Vein Operators' Association of Ohio, for two years; manager of Lakes and Canadian distribution, U. S. Fuel Administration, Washington, D. C., during the war; vice-president, Clarkson Coal & Dock Co. and general manager, Clarkson Coal Mining Co., Cleveland, Ohio.

During his long association in the coal industry Mr. White has won the esteem of a host of friends and well-wishers. Before making further plans he expects to enjoy a few months' vacation on his farm in Virginia.

THE CITY COUNCIL OF BUFFALO, N. Y., has thrown out all the bids, ten in number, for furnishing 45,000 tons of water-works coal, the lowest bid of \$2.40 with a rail rate of \$2.51 added being considered too much above the current price. Coal will be bought in open market and stocked.



Production and the Market



Weekly Review

INQUIRIES from abroad for spot prices on export coal and the prospect of a little business marked the beginning of the second week of the British strike. There is as yet no expectation that a demand for export will materialize out of the crisis in Great Britain. A settlement there is impending and no prospect of a coal shortage.

Having just completed a "coal year" with an output of 522,500,000 net tons of bituminous coal, the third largest in history, shippers are looking forward with hope and expectancy to the next twelve months' coal business. The outlook may be summed up in few words—production unprecedently low and still sinking, spot prices as low as they can or will go, buyers without confidence in the market and making no current purchases of coal, coal-mine labor idle but unions decidedly opposed to discussing even the possibility of wage reductions and finally the railroads fast getting in such shape with reduced man power and such an increasing number of coal cars in bad order that they will be able with difficulty to take care of any increase in coal shipments later on. The foregoing facts taken together point toward a sharp rise in soft coal prices next autumn. It is pointed out, for instance, that in the Middle West buying is at such a low ebb that by

autumn, if no improvement takes place in the meantime, there is certain to be a car shortage with no greater consumption than at present.

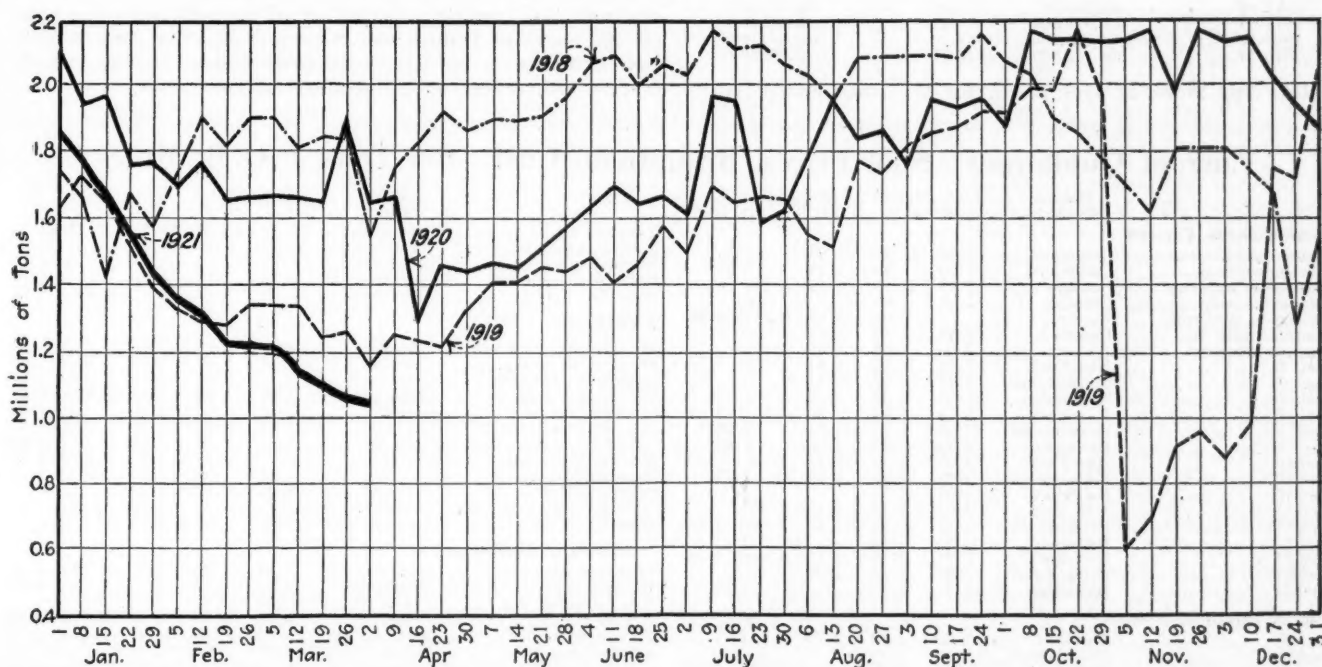
Prices are practically stationary, *Coal Age* index of spot prices of soft coal for this week being 102, a gain of one point in one week. There is absolutely no profit in these prices, equivalent as they are to a price level of two years ago and with labor costs up 40 per cent in the same period.

LACK OF CONFIDENCE DELAYS BUYING

As the weeks go by it is being realized that what is holding back buying of coal and other basic commodities is lack of confidence—that prices are not going still lower. Scattering reductions in wages of coal-mine labor are being reported from non-union fields, but there is no indication that union labor will suffer a reduction and it is certain that the larger non-union fields, as the Pocahontas, will not initiate such a move. Inasmuch as contracts can be had with provision for wage reductions, it is not apparent why buyers should hold off entering into arrangements for tonnage in expectation of lower prices.

Prices, in fact, do not seem to be the stumbling block on commercial coal contracts, as they are proving to

Daily Average Production of Bituminous Coal*

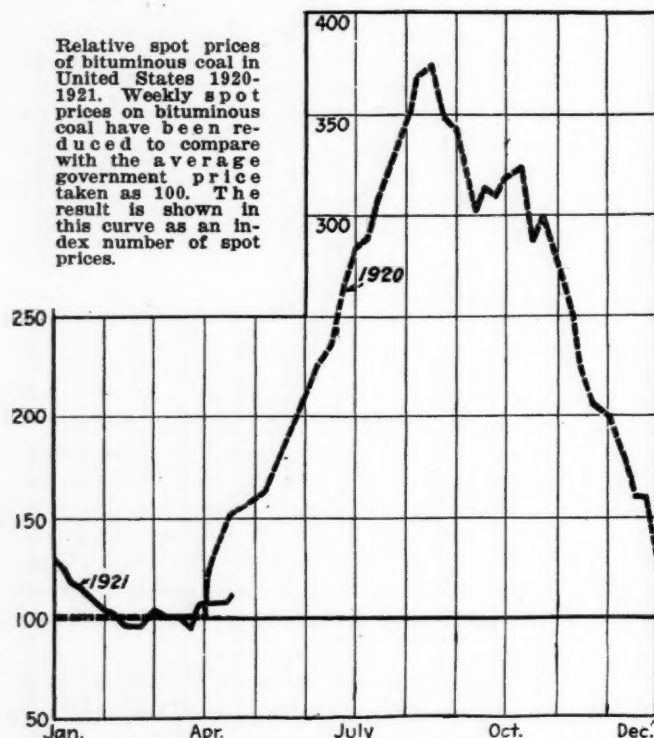


*From weekly report of Geological Survey.

be on future railroad fuel business, for some small business is reported closed in the Central and Middle West covering deliveries as late as next autumn with price open.

BITUMINOUS

As the coal year came to an end production continued to decline. According to the Geological Survey, the output for the week ended April 2 was 5,797,000 net tons, or a decrease of 670,000 tons from the output for the week preceding. Idleness on Easter Monday and Mitchell Day, April 1, was a factor that accounted for the loss of one and one-half days of production.



The total output for the coal year 1920-21 is estimated at 522,458,000 net tons. Comparative tonnage for the preceding years follows:

1913-14.....	482,682,000	1917-18.....	548,715,000
1914-15.....	399,898,000	1918-19.....	552,041,000
1915-16.....	479,920,000	1919-20.....	486,899,000
1916-17.....	504,102,000	1920-21.....	522,458,000

Coal Age index of spot prices for the week ended April

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY
(NET TONS)

BITUMINOUS COAL

Total Bituminous, Including Coal Coked

	1921	1920
	Week	Calendar Year
	to Date	to Date
March 19.....	6,512,000	90,344,000
Daily average.....	1,085,000	1,362,000
March 26.....	6,467,000	96,811,000
Daily average.....	1,078,000	1,339,000
April 2.....	5,797,000	102,608,000
Daily average.....	1,054,000	1,310,000
March 19.....	10,348,000	115,570,000
Daily average.....	1,725,000	1,743,000
March 26.....	11,015,000	126,585,000
Daily average.....	1,836,000	1,751,000
April 2.....	9,715,000	136,300,000
Daily average.....	1,763,000	1,741,000

(a) Less 2 days' production during first week in January to equalize number of days covered for the two years. (b) Revised from last report. (c) Subject to revision.

ANTHRACITE

	1921	1920
	Week	Calendar Year
	to Date	to Date
March 19.....	1,687,000	20,304,000
March 26.....	1,564,000	21,868,000
April 2.....	1,157,000	23,025,000
March 19.....	1,601,000	18,688,000
March 26.....	1,921,000	20,609,000
April 2.....	1,314,000	21,923,000

(a) Less 2 days' production during the first week in January to equalize number of days covered for the two years.

BEEHIVE COKE

	Week Ended	1921	1920
	Mar. 26	Apr. 3	to Date
	1921	1920	to Date
Apr. 2	93,000	99,000	476,000
Mar. 26	99,000	476,000	2,567,000
Apr. 3	476,000	2,567,000	5,951,000

(a) Subject to revision. (b) Revised from last report. (c) Less 2 days' production during New Year's week to equalize number of days covered for last two years.

12 increased one point and now stands at 102. Spot demand has increased very little, but the observance of spring price schedules made by operators effective April 1 has caused this advance. Talk of possible railroad and miners' wage reductions and lowered freight rates, coupled with the great uncertainty of what the future may hold, has all combined to make the buyer feel inclined to hold off in the hope of a further lowering of coal prices.

Lakes business is slow. Practically all available bottoms at the Lower Lakes docks are now under load awaiting the clearing of ice at the "Soo." There will be no early movement of ore, consequently after the winter fleet sails it may be some time before any additional vessels will be available for loading. Reduction of freight rates for coal off the docks of Duluth and Superior, effective July 6, will have a tendency to delay any early inland buying, which in turn will reflect on the demand at the mines.

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Market	Quoted	Mar. 1920	Mar. 15 1921	Apr. 5 1921	Apr. 12 1921†
Low-Volatile, Eastern					
Pocahontas mine run.....	Columbus.....	\$2.35	\$3.50	\$3.50	\$3.50
Pocahontas lump.....	Columbus.....	2.60	5.50	5.50	5.50
Pocahontas mine run.....	Chicago.....	2.35	3.65	4.15	3.25@ 4.50
Pocahontas lump.....	Chicago.....	2.60	5.00	5.15	4.50@ 5.50
*Smokeless mine run.....	Boston.....	2.95	5.65	5.85	5.75@ 6.25
Clearfield mine run.....	Boston.....	2.95	2.50	2.45	2.00@ 2.75
Somerset mine run.....	Boston.....	2.95	3.00	3.05	2.35@ 3.75
Pool 1.....	New York.....	2.95	3.25	3.40	3.25@ 3.50
Pool 1.....	Philadelphia.....	2.95	3.50	3.50	.....
Pool 1.....	Baltimore.....	2.95	3.00	3.15	3.15
Pool 9.....	New York.....	2.95	3.05	2.80	2.65@ 3.00
Pool 9.....	Philadelphia.....	2.95	3.25	3.05	3.25
Pool 9.....	Baltimore.....	2.95	2.85	2.90	3.00
Pool 10.....	New York.....	2.95	2.45	2.45	2.25@ 2.50
Pool 10.....	Philadelphia.....	2.95	2.50	2.65	2.75
Pool 10.....	Baltimore.....	2.95	2.50	2.50	2.50
Pool 11.....	New York.....	2.95	2.20	2.15	2.00@ 2.25
Pool 11.....	Philadelphia.....	2.95	2.30	2.00	2.00@ 2.25
Pool 11.....	Baltimore.....	2.95	2.30	2.25	2.25
Pool 71.....	New York.....	2.95	2.75	3.15	3.00@ 3.25
Pool 71.....	Philadelphia.....	2.95	2.75	3.00	.....
Pool 71.....	Baltimore.....	2.95	2.65	.....	3.00
High-Volatile, Eastern					
Pool 34.....	New York.....	2.50	2.10	2.00	1.80@ 1.90
Pool 34.....	Philadelphia.....	2.50	2.15	2.15	1.75@ 2.00
Pool 34.....	Baltimore.....	2.50	2.00	2.05	2.00@ 2.25
Pittsburgh mine run.....	Pittsburgh.....	2.35	2.25	2.25	2.00@ 2.50
Pittsburgh sc'd gas.....	Pittsburgh.....	2.35	2.85	2.85	2.75@ 3.00
Kanawha mine run.....	Columbus.....	2.70	2.25	2.35	2.25
Midwest					
Kanawha lump.....	Columbus.....	\$2.95	\$3.50	\$3.35	\$3.50
Hooking mine run.....	Columbus.....	2.50	2.25	2.25	2.25
Hooking lump.....	Columbus.....	2.75	3.50	3.25	3.25
Pitts. No. 8 mine run.....	Cleveland.....	2.35	2.15	2.25	2.00@ 2.75
Pitts. No. 8 lump.....	Cleveland.....	2.60	3.50	3.45	3.25@ 3.75
South and Southwest					
Big Seam mine run.....	Birmingham.....	2.45	2.95	2.85	2.90@ 3.25
Big Seam lump.....	Birmingham.....	2.75	3.75	3.15	3.25@ 4.00
S.E. Ky. mine run.....	Louisville.....	3.00	2.75	2.70	2.50@ 2.75
S.E. Ky. lump.....	Louisville.....	3.25	3.75	3.55	3.50@ 3.75
Kansas mine run.....	Kansas City.....	3.50	4.50	4.40	4.25@ 4.50
Kansas lump.....	Kansas City.....	4.00	5.50	5.50	5.00

* Gross tons, f.o.b. vessel, Hampton Roads. Quotations on Pocahontas mine run, Boston market, heretofore quoted included both Pocahontas and New River and will henceforth be quoted as West Virginia "Smokeless."
† Advance over previous week shown in heavy type, declines in italics.

The British strike has had no effect on the American market so far as actual orders placed are concerned. Dumpings at Hampton Roads for the first week in April were 173,965 gross tons, considerably under the weekly average for March.

Shipments coastwise to New England are diminishing as demand practically does not exist. Recent cargoes on consignment have resulted in disastrous sales. The Panama R.R. bids show that the Hampton Roads market has not improved, and producers are extremely careful to make no shipment unless there is an order in hand to cover. All-rail shipments to New England improved somewhat during the week ended April 2, when 2,755 cars were forwarded through the five rail gateways.

ANTHRACITE

Production dropped to 1,157,000 net tons during the week ended April 2, as against 1,564,000 tons the week preceding. The decline reflects in part the observance of holidays, although "no market" losses are growing rapidly. The total output for the coal year is estimated at 89,950,000 net tons. Cumulative production for the calendar year to date stands at 23,025,000 tons, an increase over 1920.

Retail yards are well stocked, taking the country as a whole, but the public is not buying in a manner to cause orders to be placed with producers. Retail prices have been slashed in an effort to invite business, but the consumer, who is just becoming accustomed to the reduction

idea after many months of advancing prices, evidently likes the taste and is in favor of more—at any rate, he is not placing orders as in former seasons.

Receipts of anthracite in New England in February, 1921, were 1,114,371 net tons, of which 350,267 tons came in by water and 764,104 tons by rail. In the same month a total of 1,264,607 net tons of bituminous coal was received, 543,848 tons by tide and 720,759 by rail. The total receipts of anthracite in New England in the eleven months of the coal year, April 1, 1920, to Feb. 28, 1921, were 11,046,032 net tons, and of bituminous 20,807,111 net tons, according to the Massachusetts Fuel Administration.

COKE

Declining production of beehive coke was unchecked during the week ended April 2, and there is yet no definite indication that the bottom of the depression has been touched. Total production for the week ended April 2 was 93,000 tons, according to the Geological Survey—less than one-fifth of that in the corresponding week of 1920. At two or three of the Connellsville coke works the men have refused to work at the reduced independent scale recently announced, although this is not affecting the region's production. Prices are now low enough to stimulate consumption if they were a governing factor, but the consumers simply do not want coke. Connellsville spot quotations are \$3.75@\$4 for furnace and \$5@\$5.50 for foundry, the contract market being nominally quotable at the same level.

Reports From the Market Centers

New England

BOSTON

Receipts Steadily Diminish—Few Scattering Contracts Closed—Operators Driving Hard for Spot Business—Domestic Anthracite Comes Forward—Market Quiet.

Bituminous—Notwithstanding talk of possible difficulties at home and overseas there continues a steady decrease in receipts both all-rail and by water. The outlook is too uncertain to warrant any resumption of contracts on any basis that would be mutually satisfactory to operators and consumers. Reserves of 75 per cent of the steam-users are much too large to admit of spot shipments and the wide margin that still exists between spot quotations and those of contract creates a deadlock not likely to be broken during April.

Dealers find it extremely difficult to move steam coal of any grade. In Boston, because of local differences among distributors, the price has again been reduced, this time a full dollar per ton making the new price \$9.75, delivered. If \$3 be allowed for overhead, this new figure scales down to \$2 per net ton at the mines for Pocahontas and New River.

On the smokeless coals a few scattering contracts have been closed, in all amounting possibly to 100,000 tons, but we have yet to hear of any tonnage actually closed on any basis higher than \$3.

We hear of no distress coal now on the market, at least at this end. In view of the present utter lack of demand he would be a hardy merchant who would dare send coal here on consignment. Certain municipal requirements that conveniently absorbed market cargoes a few weeks ago have now been arranged for, and there is practically no opening for steam coal in any direction at this writing.

The experience of the Panama Railroad Co. makes it clear that the Hampton Roads market has changed in no important particular. But one of the several tenders was on the basis of \$3 per net ton at the mines, and that for only 220,000 tons, but after the higher bids were rejected the buyer found little difficulty in covering the balance of the 700,000 tons at the same basis.

Pocahontas and New River, f.o.b. Boston and Providence, have sold down to \$8.25 per gross ton. Other quotations are shown in the Weekly Review.

Anthracite—While domestic sizes are coming forward in fair volume the bulk of the business is for stove size. Egg and chestnut were shipped last season in such undue proportion that considerable stocks are being carried over. Pea can hardly be accepted.

Retail demand continues extremely quiet. There have been so many news items with respect to reductions the past four weeks that the general public feels strongly that a reduction of only a dollar from last season's peak price, as in Boston, is by no means enough. Should the buyers' strike continue through all the spring months, how-

ever, there would undoubtedly follow grave consequences the latter part of the year.

Tidewater—East

NEW YORK

Anthracite Market Shows Improvement—Steam Coals Scarcer—Bituminous Situation Better—Contract Prices Practically Withdrawn.

Anthracite—Conditions show an improvement. Buying is steadier and consumers have begun to lay in their winter fuel. All branches of the trade have announced the new spring and summer prices and while the producers have not so far let it be known, it is expected their prices will advance 10c. per ton on domestic coals on May 1.

Dealers are encouraged by the heavy receipt of orders since April 1. Appeals have been sent out by City Department Heads and the dealers, urging early buying to avoid the rush next fall.

The situation has been steadier with the closing down of many mines, mostly independent, because of the dullness of the past few weeks. This had a tendency to maintain prices for independent domestic at or slightly above company prices. Independent egg is being quoted at \$7.35, and stove and chestnut at \$7.75.

Pea coal is in large supply and hard to move. Quotations for independent stocks range \$4.75@\$5. The buckwheats are not so much in evidence because of the closing down of many independent mines. There is a strong market for rice and barley, the latter size being quoted by independent shippers at 10c. above the company circular. Buckwheat and rice are being held stiff at \$3.50 and \$2.50 respectively.

There has been a gradual cleaning up of loaded boats of buckwheat and rice and the latter part of the week quota-

tions ranged around \$5.75 alongside for buckwheat and \$5 for rice.

Current quotations for company coals, per gross ton, at mine f.o.b. Tidewater, lower ports, are as follows:

	Mine	Tidewater
Broken	\$7.10@7.75	\$ 9.71@10.36
Egg	7.10@ 7.75	9.71@ 10.36
Stove	7.35@ 8.10	9.96@ 10.71
Chestnut	7.40@ 8.10	10.01@ 10.71
Pea	5.65@ 6.00	8.12@ 8.47
Buckwheat No. 1	3.50	5.97
Rice	2.50	4.97
Barley	1.50	3.97

Bituminous—There is a better feeling in this market. Quotations are a trifle steadier and there is not much surplus coal to be had. The strike of the English miners has resulted in many inquiries but few if any orders have been reported.

The ending of contracts on April 1 has had the effect of closing down some mines that had been kept open by contracts. However, the trade believes the worst is over.

The making of contracts for the new year has been a disappointment to many. Some shippers estimate that only about 5 per cent of the usual number have been closed. Because of the present market conditions, contract quotations have been practically withdrawn for the present, producers depending entirely upon spot sales. Liners are providing against a possible shortage of British fuel by taking on a double supply of bunker coal here.

There is not much of the higher grades on the local docks. The railroads are buying considerable coal in the open market at low prices.

Quotations for the various pools, f.o.b. this harbor ranged about as follows: Pool 1, \$6.15@6.30; Pool 9, \$6.10@6.25; Pool 10, \$6@6.10; Pool 71, \$6.15@6.30; Pool 11, \$5.50@5.75; Pool 18, \$4.50@4.75. Mine quotations are reported in the Weekly Review.

PHILADELPHIA

Anthracite Shows Temporary Briskness—Consumer Expects Further Reduction—Bituminous Shows Slight Improvement—Contracts Quiet, But Firm Export Inquiries Only.

Anthracite—For over a week now the retail trade has had in effect the spring prices, which represent about \$1.50 reduction. While there was some quickening of the trade, it must be admitted that in the main the response has been disappointing.

Retailers are generally keeping to prices of \$13.50, per gross ton, for egg, \$13.75 for stove and nut, and \$10.50 for pea. There is some price-cutting, and in one section in particular where the highest prices were charged last winter, one dealer is now selling egg at \$12.75, stove and nut at \$13, and pea, \$10.50.

The trade is using its best efforts to get the public to take in coal now, assuring them that prices are now at the lowest level, but the public seems to feel that further reductions must be in order.

Operators report their mines working full-time and profess to believe that they will be able to keep going for some time at this rate. This condition

is true more of those concerns who have come close to company figures in their price schedule.

It is in the steam sizes that the greatest amount of trouble is being experienced. The companies are storing heavily, as the current demand is far below production. The independents are often satisfied if they can make sales of their surplus buckwheat at \$3, and we have heard it hinted that rice on some occasions has touched below \$2.

The company prices per gross ton mines for line shipment and f.o.b. Port Richmond for Tide are as follows:

	Line	Tide
Broken	\$7.25	\$ 9.95
Egg	7.25	9.95
Stove	7.55	10.20
Nut	7.55	10.20
Pea	5.90	8.30
Buckwheat	3.50	6.00
Rice	2.50	5.00
Boiler	2.00	4.40
Barley	1.50	3.90

Bituminous—There is just the slightest shade of change for the better indicated. Whether this is due to real improvement, or some moral effect of the British trouble is difficult to say, probably a little of both. By some the claim is made that with the further curtailment of mining what little demand there is has a tendency to stimulate prices for the small available tonnage. Spot prices are quoted in the Weekly Review. There is also a slight tendency on the part of the consumer to take in more coal.

The contract situation is unchanged. Concerns with tonnage to offer are growing more firm in their decision to hold to their prices, as they have found the consumer entirely unwilling to enter into contract. It seems to be the intention of the buyer to go along through the summer at least on the basis of market prices.

Some interests profess to see some stiffening in the export trade due to British labor troubles, yet when this is carefully studied it can easily be seen that it would take a period of months to affect the local market. The fact remains that millions of tons could be assembled at the seaboard for foreign delivery without affecting the domestic situation.

BUFFALO

No New Business Developing as Contracts Expire—Spot Market Inactive—Anthracite Demand Dulled by Price Question.

Bituminous—Production outlook for the next thirty days is not promising. No business revival is taking place and all members of the trade are sitting back and waiting for the dull period to work out. Next to nothing has been done as to the making of new contracts. The matter of price appears to be the main deterrent as consumers would sign up at \$3 a ton, at which price producers say they can and will not mine coal for the next twelve months. About \$3.50 appears to be rock-bottom from the producers' standpoint.

Mines are now idle that practically never shut down before. It is generally believed that there will be a revival in demand in May, although consumers

whose contracts have now expired have been buying much coal on the outside right along, so they are not short as they would be otherwise, for their contracts were easily \$1 over the current price and they would not stock up from that source.

Prices are not very uniform, a fair average being \$3.50 for Youghiogheny gas lump, \$3 for Pittsburgh and No. 8 lump, \$2.60 for all mine run and \$2 for slack.

Anthracite—As mild weather has apparently come to stay, the demand is extremely light, and all movement will hereafter be for next winter's use. The public has a notion, apparently unfounded, that prices are likely to be reduced again and are not buying for future needs. Some independent coals are still bringing a slight premium.

Loading for Lakes is still brisk and will continue as long as the vessel tonnage lasts. Apparently there will not be many more cargoes loaded until the arrival of the down fleet, as the soft-coal ports want all available bottoms.

Coke—Of the local byproduct plants, one is shut down and the other is running only one of its three batteries of ovens. Only occasional orders are placed, at bottom prices, \$5.25@6 for 72-hour Connellsville foundry, \$4.25@4.75 for 48-hour furnace, \$3.75 for stock and \$5.50@6 for domestic sizes.

HAMPTON ROADS

Dumpings Decline—Prices Stiffen—British Strike Fails to Stimulate Trade.

Tide accumulations fell off during the first week of April. The British strike has had no effect on the tonnage moved, although prices have advanced—Pools 1 and 2 are now around \$6.50, and other pools are \$5.25@5.50. Business is extremely dull, although the trade believes the new steamship contracts, May 1, will stimulate business, with the reduction of wages by 20 per cent and consequent reduction in operating costs.

Figures for the first week in April at the coal piers are as follows:

C. & O. piers, Newport News—	
Cars on hand.....	2,621
Tons on hand.....	130,550
Cars dumped.....	1,222
Tons dumped.....	61,569
Tonnage waiting.....	1,725
Virginian Ry. piers, Sewalls Point—	
Cars on hand.....	1,321
Tons on hand.....	66,050
Car dumped.....	779
Tons dumped.....	38,968
Tonnage waiting.....	28,700
Cars on hand outside pool.....	245
N. & W. piers, Lamberts Point—	
Cars on hand.....	1,962
Tons on hand.....	87,243
Cars dumped.....	1,367
Tons dumped.....	73,428
Tonnage waiting.....	3,350

BALTIMORE

British Strike Brings Many Inquiries—Prices Are Stiffening and Market Is Sensitive—Anthracite Market Is Dull.

Bituminous—The British strike has stiffened the American soft coal situation. For ten days a stream of inquiries has been coming in. And the end is apparently not yet, for the inquiry line is increasing rather than diminishing. Whereas it first came

only from southern Europe, it now runs from South America to the Scandinavian countries.

The home market is still slow, although prices on better coals are responding to the "feeling in the air." The sensitive nature of the market is shown in the fact that good coals on fairly large lots are openly seeking a market at prices much below those offered when a purchaser offers to take a large amount and for quick delivery to Tide. The undoubted tendency is to push coals as much as possible on both spot and contract business on pretty low figures in the home market but to hold out for a good share on foreign business offering or expected shortly.

Prices are shown in the Weekly Review and are slightly stiffer. Very little Pool 18 is in the market, as there is no true demand for this. There is little gas lump offering, as the lack of demand for slack is making the operations force out mine run. Export movement at present continues light.

Anthracite—Urging customers to buy at once as this is the low purchase period of the year, and being received by said purchasers in many cases with a feeling of uncertainty, is the experience of the hard coal trade here. The present retail figures are one dollar off those of the past winter, but it is hard to convince many consumers that another cut is not in prospect. They will probably purchase coal slowly, in the hope that another cut is due.

Consumers this season are again being asked to sign order blanks, on which they agree to accept the coal ordered at the convenience of the dealer and at prices prevailing at time of delivery. The Baltimore Coal Exchange has backed the public up in the complaint that much of the coal received here in the past two years has not been properly prepared, and the various producers have been addressed a communication in which it is asked that the large proportion of impurities be reduced, and that the mixing of smaller sized coal with ordered sizes be discontinued.

Northwest

MILWAUKEE

Dealers Predict May Cut in Anthracite—Coke Tumbles—First Coal Cargo Arrives.

Very little is doing and while prices are held steadily, there is considerable speculation as to the future of the market in this respect. A leading dealer is responsible for the statement that a reduction of 50c. per ton on anthracite will become effective May 1, and that an additional reduction will be made upon the arrival of substantial Lakes receipts probably late in April. After the basic price for hard coal has been determined, the price will be increased 10c. each month as has been customary for years past.

Solvay coke has been reduced 50c. Large sizes and nut are now sold at

\$14 and the smaller sizes at \$11. Gas coke was let down \$1. Nut is now \$12.50 and small nut \$11. The coke piles are decreasing very slowly.

The first cargo for the season arrived on April 4, and consisted of 10,000 tons of soft coal screenings. Wages of 1,500 men employed on the coal docks at Superior and Duluth will be reduced from 20 to 30 per cent beginning May 1. Fifteen companies are concerned in the movement. Milwaukee dock companies have taken no steps in this direction as yet.

MINNEAPOLIS

No Market Activity, Despite Warning of Seasonal Rush—Northwest Is Not Absorbing Sufficient Tonnage to Justify Early Stocking.

The new season in the coal trade arrived with nothing more stirring than the customary argument from Judge McGee that the Northwest should buy coal early to guard against a possible fall rush. However, this has been fairly well discounted by the local jobbers.

Coal men are confident of their ability to handle the season's business as well as they did in all the years preceding the period of war control. Lately they were handicapped by apron-stringed methods of supervision and irresponsible direction, causing delay and trouble for which the trade was blamed.

But they cannot see any outlet for early bought coal, although they do see additional expense to carry it through several months until the demand does set in. The agitation for a reduction of freight rates will cause retailers to hold back on their orders in the hope of this being accomplished. Retailers would hardly buy coal even with a reduction in freight because they know their own chances of moving it at an early date are not good. All hands propose to wait until they can see a place to sell before they undertake to stock very much coal at any prices which are likely to be quoted then.

It is not secret that dealers and consumers regard the cost of coal laid down in the Northwest as too high and they hope for relief, although it is not plain from whence their relief is to come. Certain it is that there is no snap to the buying demand as the new season opens. All signs point to an extremely sluggish movement of coal until the season has progressed for several weeks.

DULUTH

Sales Are Slow—Docks Operate Half-Time—Wage Reductions Effective April 15.

With the clearing of the harbor, it is now possible for boats to move to any of the docks. Boats will move just as soon as ice at the "Soo" is sufficiently broken to allow their passage. No improvement is shown in coal sales and all of the docks are still working half-time.

The Coal Dock Owners have presented a new wage scale to employees.

All operators, etc. are to be reduced 10c., and labor is reduced 15c. per hour. Eight, nine or ten hours is to constitute a day's work and no overtime will be paid until ten hours work has been performed in any one day. The employees have until April 15 to accept or reject the new schedule.

Inland West

CHICAGO

Business Very Unsatisfactory—Few Contracts Closed—Industries Using Reserves.

Some of the railroads are showing signs of a little worry over the coal situation but they are feeling the lack of ready money so strongly that they are unable to step into the market and purchase coal. Besides, the average operator does not feel like selling a large tonnage to a railroad at a very close price and then receiving no payment for the coal until six months hence. Coal stocks are being reduced steadily and no steps are being taken toward replenishing the supply in spite of the fact that the air is filled with rumors of railroad strikes and other foreseen and unforeseen difficulties.

To give an idea of market conditions, we talked to the sales manager of a large coal concern the other day, and this gentleman said that he had a man traveling in South Dakota, Minnesota and Iowa, who had been out three weeks and sold but one car of coal. Another concern reports that their best salesman, who under normal conditions was good for 5 or 10 cars a day, has been two weeks in northern Illinois without selling a pound of coal.

Some contracts have been closed on steam coals during the past week or so, but these call for shipments to start later on rather than immediately. We know of one case where a large tonnage of Indiana steam coal was contracted at \$2.65 per ton for 2-in. screenings. Another contract on Indiana fifth vein coal went at \$2.40 for screenings. Steel companies are running on a very unsatisfactory basis and are subsisting almost entirely on their storage coals. The packers are holding down their contracts to a minimum, and purchasing considerable coal on the open market.

ST. LOUIS

Spring Conditions Prevail—No Domestic Moving—Steam Demand Fairly Good.

Spring weather has made itself felt to a marked degree in the movement of domestic tonnage. The campaign, opened last week by large newspaper advertisements suggesting the advisability of storing coal early on the part of consumers has not as yet made itself felt.

Anthracite received so far is not up to grade and there is likely to be a lot of rejections. Some so-called anthracite from Virginia is arriving and is being rejected on account of the poor quality. There is no activity in smoke-

less, and the price of Arkansas coals almost makes them prohibitive.

Steam business is slowing up for some unaccountable reason. Screenings, which were in demand a week ago, are somewhat easy and prices are breaking. This is in the face of the fact that many additional mines are shutting down and not as much tonnage is being offered. A little steam coal is moving to Chicago and some to Omaha, but other than that there is nothing doing.

CLEVELAND

Slack Market Firmer—Retail Prices Cut—Production Slumps and Outlook Is Gloomy—Lakes Movement Delayed.

Bituminous—Numerous contracts are expiring and consumers are filling their restricted needs by hand-to-mouth purchasing. Each week is bringing out a fair volume of inquiries on contracts, but consumers apparently feel that they have nothing to lose by holding off. In addition to the feeling that lower prices may prevail later in the year, industrial users are uncertain about their exact needs in view of the trade uncertainty. Thus far, the only important increase in manufacturing being noted is in the automobile industry. Additional shops are closing down, however, counteracting any gains that have been made.

The immediate industrial outlook in this district is far from encouraging for the coal trade.

Receipts of bituminous coal during the week ended April 2 were the lightest in many weeks, amounting to 599 cars steam and 208 retail; total, 807 cars, as compared with 928 cars the previous week.

Spot No. 8 slack is now quoted at \$2.25@2.50, compared with as low as \$1.85 a few weeks ago.

Anthracite and Pocahontas—Further lowering of anthracite prices has featured the market in the last week. Pocahontas prices have not been moved downward but readjustments are expected before the month ends. The market continues painfully dull and stocks of dealers are large.

Lake—Most of the steamers at this end have been loaded. Carrying charges on coal have not been fixed and it is not believed that this matter will be closed until action is taken on ore rates. Prices for bunker coal will be announced soon. The ore movement is expected to be extremely slow in starting and the coal movement will be correspondingly delayed.

Retail prices of coal delivered follow:

Anthracite—Egg and grate, \$13.75; chestnut, \$13.90; stove, \$13.95.
Pocahontas—Shoveled lump, \$11.40; mine run, \$9.50.
Domestic Bituminous—West Virginia splint, \$10; Pittsburgh No. 8, \$8.45; cannel lump, \$12.15.
Steam Coal—No. 6 and No. 8 slack, \$5.75; No. 6 and No. 8 mine run, \$6; No. 8 2-in. lump, \$6.

DETROIT

Dullness, with Very Narrow Buying Demand Continues—No Contract Interest—Over-Supply of Hard Coal.

Bituminous—Sales of bituminous are of small volume, and it is extremely

difficult to interest buyers of either steam or domestic. The most favorable feature of the unsatisfactory market is the circumstance that the mines are sending on very little coal. Consequently, the market is not struggling with a burden of over-supply.

Very little interest has developed in the matter of contracts. Buyers are indifferent, while some of them express a belief that they will be able to supply their requirements in the open market at prices as favorable as would be named in contract arrangements. Ohio lump is \$3.50@3.75, mine run, \$2.50@2.60, nut and slack \$2@2.25. Four-inch lump from Kentucky or West Virginia is \$4, 2-in. lump, \$3.75, egg is \$3.50, mine run, \$2.75, and slack is \$2.25. Smokeless lump is \$5.50@6, mine run \$3.75, and slack \$2.25. The foregoing prices serve in contract negotiations. Some sales of spot coal are at a lower level.

Anthracite—With the arrival of summer temperatures householders have withdrawn from the market. Retail yards appear rather well supplied. Dealers are apparently disinclined to take losses on this stock that might result from selling on the lower price basis, which most of the producers made effective April 1.

CINCINNATI

Contract Market Inactive—Steam Sizes Weaken—Retail Prices Are Steady.

The British strike has not proved any lever toward hurrying up those who are dallying in the making of their coal contracts. One effect of absence of contract business has been to cheapen the price of nut and slack. There has been no great drop, but the market is easier for free-coal offerings. The price is \$1.75@2 for southern Kentucky and West Virginia tonnage, and while this is little changed from the values named last week, the inclination is downward. This seems to be traceable to the expiration of steam contracts, the takers going into the open market for their coal, the tonnage released adding to the burden of a top-heavy market.

Mine run continues to be in excess of requirements and hard to dispose of. The spot price is around \$2@2.25. Block and lump have increased a little. Last week where the usual quotation was \$3.25@3.50 it is now \$3.50@3.75.

Quotations for future business are quite out of line with the immediate market. High-grade West Virginia products are being quoted \$2.65 for steam sizes, \$3 for mine run and \$4 for lump. The first of the month saw no change in the retail price situation.

COLUMBUS

Little Contracting Reported—Better Tone to Market—Retail Prices Weaken

While showing a better tone, the coal trade is still dull and inactive. Buying on the part of retailers as well as steam users is restricted to present needs only and there is no disposition to take a chance in buying for the future. It is strictly a buyer's market,

with considerable cheap coal offering at all times, which has the effect of keeping down quotations. But the best feature is the fact that the quantity of track coal is now diminishing.

The Lakes trade is now one of the important features. Reports show that loading of vessels at the Lower Lakes ports is still going on and this will take some tonnage for several weeks to come. With ice out of the lower passages several boats have sailed. Other cargoes are expected to move soon. Very few Lakes contracts have been closed. Dock owners with operating connections are the principal shippers so far.

Retail prices have declined again in sympathy with the weakness at the mines. Hocking lump is now \$6.75, mine run \$5@5.25. West Virginia splints are \$7.50 for lump and \$6 for mine run. Pocahontas lump is \$9.50.

Railroads are asking for bids. Some few railroad contracts have been closed but others are still going begging. Public utilities are the best customers at this time and are taking all of the available screenings. As a result of the reduced production of lump, screenings are stronger all along the line. The usual mine price ranges \$1.85@2.15.

South

LOUISVILLE

Some Contracts Being Closed—Retailers Reduce Prices for April—Spot Prices Firm.

It is reported that the L. & N. has just closed annual contracts at figures around \$3 and slightly higher for eastern Kentucky mine run, of six-inch and upward size; \$2.75 western Kentucky; \$3.30 and up on Alabama. Tonnage contracts have been reduced somewhat in the Hazard, Alabama and western Kentucky sections, but on the Cumberland Valley division in southeastern Kentucky tonnage contracts are slightly higher, due to existing transportation facilities. Some Lakes contracts are reported to have been made, and others are in the making.

Retailers have reduced quotations for April stocking, the majority of houses quoting western Kentucky lump at \$7; nut, \$6.50; mine run, \$6.25; nut and slack, \$5.50; eastern Kentucky, lump, \$8.25; Straight Creek, \$8.50@8.75; mine run, \$7.50; screenings, \$6.50; anthracite, \$17; coke, \$14; Smokeless, lump, \$11; mine run, \$10. Some companies are quoting 25c. under these prices where coal is dumped at destination.

BIRMINGHAM

Domestic in Fair Demand—Steam Unimproved—Production Practically on Basis of Trade Requirements—Prices Stiffen.

Dealers have evidently awakened to the wisdom of entering the market and making provision for their supply for the coming year. Contracting is pro-

ceeding in a satisfactory manner for all the better grades of domestic fuel. One of the largest sales agencies are sold up through the year on their allotment of Cahaba, Black Creek and Montevallo from their principals, with good inquiry for Carbon Hill and other medium grades and some business being booked for the product from this field. Quotations are as follows for lump and nut per net ton mines: Big Seam \$3.25@ \$4; Cahaba and Black Creek \$4.50@ \$5; Carbon Hill \$3.75@ \$4.25; Montevallo \$6.50.

There has been no improvement in the demand for steam sizes and apparently there will be little or no change until the middle of the summer. Resumption in industrial lines is very slow. Railroads are suffering from a lack of freight and are taking from one-third to three-fourths of minimum under contract. Prices are shown in the Weekly Review.

Mining operations are following very closely the actual fuel needs as evidenced by the market and there is comparatively little coal being mined which has not been sold in advance. Operations average two days per week.

Southwest

KANSAS CITY

Oil Competition Dwindling — Better Tone to Steam Market—Prices Firm.

Oil competition, which has been disturbing the coal trade for the past few months, is passing away. Large oil companies will not make contracts for a year at a definite figure and steam plants are reluctant to close with smaller concerns for fear the supply will be cut off when the pinch comes.

Manufacturing shows a little gain, some plants that had been idle resuming operations. The outlook for the steam market is now more encouraging, although consumers still hope for lower prices. High labor cost is the hardest obstacle to overcome as there is no possible chance for reduction in labor for at least a year in this section. It is not so much the increase that was granted lately but the inefficiency caused by this increase that is adding to the operators' problem.

Domestic grades are in lighter demand than for several years. Arkansas lump for April is \$6, mine run \$4.50, slack \$3.50; Kansas lump and nut is \$5, mine run \$4.25@ \$4.50, mill \$4, slack \$3.75; north Missouri lump is \$4.50, mine run \$4, and washed slack \$4.05.

West

DENVER

Production Slightly Better — Storage Buying Is Sluggish—Retailers Shave Prices.

What is believed to be the first indication of an upward climb in output

came the last week in March after a low level for the winter in the week ended March 19—114,000 tons. The output for the week ended March 26 was 125,667 tons of a possible full-time production of 257,620 tons. The opening days of the April storage business have brought no assurance of a steadier market.

Retailers on April 1 met the price of \$10.50, which the largest operator is selling through its bituminous department, but there is no effort to push tonnage at that figure. The margin of the leading company is down to

about \$2.05, and retailers buying from other operators have to shave their intended gross margin 15c.

Routt County lump bituminous is \$11.50. The mine price in both fields is \$5.50, although some operators are adhering to \$5.65, made before the Colorado Fuel & Iron Co. announced its April price of \$5.50.

Coking steam coal has dropped from \$3.50 to \$3, reflecting a cut from \$8.05 to \$7.40 on the Denver market. Louisville lignite for household use has tumbled 75c., making the retail price \$8.50.

News From the Coal Fields

Northern Appalachian

ANTHRACITE

Output Declines Sharply — Demand Is Not Improved — Lower Production Per Man May Necessitate Part-Time Operations.

Curtailment of production continues. Washeries are not operating, many smaller producers are closed down, and some of the larger companies have reduced their forces to the lowest possible point. A peculiar labor condition exists in some parts of the region. Production per man has been reduced to such a point that some of the collieries may soon be forced to work part time to keep down their overhead and bring production costs to a better relation to the selling price.

The Jermyn operations, which recently offered to resume work if the miners would take a reduction in pay, are still idle, as the men have decided not to accept any cut.

The output for the week ended April 2 was 1,157,000 net tons, the sharp decline reflecting the observance of holidays during that week.

PITTSBURGH

Connellsville Reduction Increases Competition — No Interest in Contracts — Spot Market Remains Irregular.

The coal trade is greatly interested in the wage reduction made April 1 by independent operators in the Connellsville region, which is non-union, and is wondering to what extent fresh competition in the market will result. Already one or two short-term contracts have gone to the Connellsville region which otherwise would in all probability have fallen to the Pittsburgh district. The independent Connellsville scale which is practically general except for the Steel Corporation interest, carries a rate for mining and loading room and rib coal of \$2.29 per 100 bu. of 76 lb., or about 60c. per net ton.

Buyers are still very apathetic, taking scarcely any interest at all in con-

tracts, and fears are increasing that so much production will be lost that late in the summer there will be more demand than can be met. The spot coal market continues soft and irregular, no strength at all being exhibited except in high-grade gas coal. Prices are shown in the Weekly Review.

Production has decreased still more and is now running at well under 40 per cent, with no prospect of improvement in the near future. Only occasional cargoes of Lakes coal are being arranged for.

EASTERN OHIO

Holidays Further Cut Production — April Outlook Gloomy — Demand for Slack Increases.

Production for the week ended April 2 amounted to only 217,000 tons, the lowest weekly output since the strike of November, 1919. Operations were restricted because of the observance of Easter Monday and April 1. The operators' association reports that mines worked 38 per cent of possible work-time but produced 43 per cent of rated capacity. With a monthly potential capacity of over two and one-half million tons the field actually mined during March 1,300,000 net tons, the resulting loss of over a million tons being mainly due to no market.

With railroads well supplied, contracts expiring, and but scanty industrial buying, operators are not sanguine as to the outlook for the next 30 days. When the further deterrent factor of a slow Lakes opening is added, many predict the low ebb of production for this month. However, shippers are hopeful that their efforts may be successful in seeking reduction in freight rates to the Lower Lake docks in order that competitive relationship may be re-established with Illinois coal to the Northwest, in which event it is expected an impetus will be given to the movement of Lakes coal from this field.

Owing to the small output of prepared sizes a scarcity has developed in the supply of slack. Aside from this, spot prices are practically unchanged

and range as follows: Slack, \$2@2.15; mine run \$2.20@2.35, 3-in. lump \$2.75@2.90, 1½-in., \$3@3.25, and domestic lump \$3.25@3.75.

UNIONTOWN

Production Not Yet Stimulated by Wage Cuts—Market Continues Inactive for All Fuels.

Reduction of independent wages in the coke region has not yet brought any general renewal of business and in that respect operators were not disappointed.

The Orient plant of the American Coke Corporation resumed operations last week, producing only coal. No announcement was made as to whether the resumption was of a temporary or permanent nature.

The market for all grades of fuel continues dead with only occasional sales of steam coal made at \$1.85@2 and with no activity in byproduct at \$2.25@2.75. The spot furnace market continues around \$4@4.25 but distress tonnage last week went begging at \$3.75. Foundry coke has the same quotation of \$5.25@5.75 with very little moving.

Very few independent plants are operating at anything like capacity. The plants of W. J. Rainey, Inc., however, continue to run 90 per cent and the Washington Coal & Coke Company last week made a substantial increase in production.

There was no protest made to the wage cut and it is now apparent that the miners will accept it once the plants start working again. There remains no information about a wage cut by the Frick company, whose plants last week operated 20 per cent on coke and 45 per cent on coal.

CONNELLVILLE

Wage Reduction Creates No Serious Difficulty—Price No Issue, as Requirements Are Simply Too Light.

At two or three of the coke works the men have refused to work at the reduced independent scale. The situation has been met by the works being formally closed, to make certain improvements for which plans had been laid, and there has been so little employment for months past in the region that it is expected no serious difficulty will be experienced.

Coke requirements continue to decrease, at the steel works blast furnaces, at the merchant furnaces and at foundries. The *Iron Age* report shows only 102 blast furnaces active April 1 out of a total of 419, and of the furnaces tributary to the Connellsville coke region the proportion of idle stocks is larger still. As to foundries, while they have largely exhausted the stocks of coke they had Jan. 1, they are taking less now than a fortnight ago.

Coke operators feel now that the market has come down amply far enough to stimulate consumption if price were a governing factor, and there is indeed no price dispute. The consumers simply do not want coke. Nothing of importance marketwise has

occurred since the sale of furnace coke at \$3.75, noted in last report. We quote the spot and prompt market \$3.75@4 for furnace and \$5@5.50 for foundry, the contract market being nominally quotable at the same level.

The *Courier* reports production in the week ended April 2 at 25,665 tons by the furnace ovens, and 24,410 tons by the merchant ovens, a total of 50,075 tons, a decrease of 3,945 tons.

UPPER POTOMAC

Many Operations Remain Closed—Producers Favor Future Spot Market.

About 60 per cent of the operations in the region were closed down because of a dearth of orders. But few new contracts were signed during the week ended April 2, and a great many producers do not expect to make any, preferring to take their chances on the future open market. Prices were not a factor in preventing spot sales, as the demand simply did not exist.

CENTRAL PENNSYLVANIA

March Production Gains—Operators Optimistic—Contracts Not Being Renewed.

Operators are beginning to feel that the peak of the slump has been reached and that indications point to better business in the near future. Production in the central Pennsylvania field for the month of March totaled 56,800 cars or approximately 3,840,000 tons, as compared with 90,144 cars or 4,507,200 tons in the same month in 1920. This represents a decrease of 36.99 per cent and was greater than either January or February, according to the following statement:

	1920 Cars	1921 Cars
January	79,114	67,037
February	65,499	56,355
March	90,144	56,800

Production during the first five days in April was about on the same scale as for March. Practically all railroad contracts have expired, and with but few exceptions have not been renewed. The effect of the strike in Great Britain has not yet been reflected here.

FAIRMONT AND PANHANDLE

No Replacement of Expiring Contracts—Operators Marking Time—All Markets Are Listless.

FAIRMONT

With the termination of many contracts, and in the absence of new shipping agreements, less coal than ever was produced during the week ended April 2. Another factor in retarding production was the celebration of the 8-hr. day on April 1. Spot demand was non-existent and there was no activity in the new contract market, except on the part of the railroads, where a few contracts have been closed with a price of \$2.75 established. But little coal was being shipped to Tide.

NORTHERN PANHANDLE

Marking time was the principal diversion of operators while awaiting a revival of demand. Railroad fuel load-

ings were a trifle heavier than they have been recently. A few contracts were being closed in the neighborhood of \$3.50 a ton, but negotiations were not proceeding on a very large scale. Production was still equivalent to only one-third of normal.

Middle West

MIDWEST REVIEW

Coal Movements More Sluggish—Talk of Freight Reductions Delays Buying—Higher Prices Inevitable.

Probably less coal moved last week than any week since the first of the year. This applies both to steam and domestic. The coal situation in the Middle West has been complicated somewhat lately by a number of cheap politicians who are seeking a little free publicity. These politicians have been widely heralding the news that railroad rates are too high and that they ought to be reduced.

The unfortunate part of this situation is that large numbers of people who buy coal, believe these statements and consequently are putting off purchasing until such time as rates are reduced. They do not stop to think that a reduction in freight rates will necessitate a reduction in labor and that any reduction in railroad labor cannot possibly be brought about before the next ninety days, if then.

Should the buying public discontinue purchasing for the next three months as they have done since the first of the year, it would be a physical impossibility to supply the demand which will naturally develop as the season advances. If the industrial situation does improve, as it is bound to, it will mean that the coal shortage will be that much more aggravated. This spreading of talk of lower freight rates is extremely pernicious at this time because this country cannot achieve an economically sound condition unless the railroads are taken care of, and this agitation for lower rates is just postponing that much longer the time of railroad readjustment.

The industrial situation shows practically no signs of change. The market on steam coal is just as dead as it has been at any time since the beginning of the year. One reads in the newspapers of industries starting up, but one does not get the news of industries that started some time back and after operating for a few weeks, had to close down through lack of orders.

In Iowa, Minnesota and the Dakotas, the situation so far as domestic coal is concerned is gradually improving. The farmers, who up until recently have been holding last year's crops in the hope of a strengthened market are now shipping their grain freely. These agricultural buyers now have a little money in hand and are coming into the market in better fashion. Some few current orders for coal have been placed by elevator companies in the Northwest, but the bulk of the orders placed

call for shipments late in the season and on the basis of prices current at the time of shipment.

In spite of the fact that practically all of the large operators and sales agencies have resorted to the most aggressive tactics, sales managers, very closely in touch with conditions surrounding the coal industry, are not looking for any improvement in the market before July. If, however, there should be a strike on the part of railroad labor, it is possible that the coal market would strengthen very quickly, as there is hardly an industry, or domestic dealer, in the West who has an adequate supply of coal on hand.

SOUTHERN ILLINOIS

Screenings Still in Good Demand—Retail Program Halted by Poor Household Buying—Field Conditions Unimproved.

Retailers do not seem to take hold of the early storing idea as yet, although some orders have been placed for immediate shipment. Dealers advise that they cannot take much coal unless the public can be induced to buy accordingly. Steam demand has been good, as a matter of fact, several mines are now crushing coal to apply on screenings contracts, as steam sizes are easily moved.

In some communities miners are having a hard time making both ends meet. The feeling prevails that mine operations will be resumed fairly well by the latter part of May. Duquoin mines are running a bare two days weekly with no uniform price. In the Mt. Olive district domestic tonnage is gradually falling off with prices ranging \$2.75@ \$3.25. Steam sizes are scarce and there are no mine run quotations. Railroad tonnage from all fields is unusually light.

Additional Standard mines have shut down for an indefinite period but operators are doing much repair work so as to be in good working shape when demand returns. When the screenings market went above \$2 several shippers billed lump on their mine run contracts, holding back screenings, and this market has again weakened to \$1.90@ \$2.

WESTERN KENTUCKY

R.R. Contracting Develops Better Tone—Production Still Low—Prices Well Maintained.

Operations are draggy. Some of the larger companies are only working a part of their mines, while some of the one-mine companies are only putting in a day and a half to two days a week.

Reports of very fair prices secured for mine run on contracts placed by the L. & N. R.R. have strengthened the market somewhat, and will probably result in operators holding more firmly for fair contract prices. Action of the railroad in placing contracts early also leads to the belief that traffic conditions later in the year may not be so ideal as they are now, and that with the L. & N. afraid to take chances, other consumers will feel the same way about putting off buying.

The larger companies are maintain-

ing prices. Averages for the field show: Prepared, \$2.90; range, \$2.55@ \$3.35; mine run, \$2.25—range, \$2@ \$2.75; screenings, \$1.75—range, \$1.50 @ \$2.60.

Middle Appalachian

HIGH-VOLATILE FIELDS

Expiring Contracts Lower Production—All Markets Sluggish—Not Much Activity Expected in April.

KANAWHA

There was a marked slump in production as the coal year closed. However, part of the idleness during the week was due to the miners' holiday. As comparatively few new contracts have been closed to take the place of those which expired March 31, it was even more difficult to place production and prices were as weak as ever.

LOGAN AND THACKER

Loadings in the Logan region, while somewhat increased, could not be construed as reflecting an improved market condition, but instead grew out of the fact that producers were storing coal on a large scale. The spot market was extremely inactive and no new contracts were being made.

Thacker production was on about the same level as during the preceding week, or about one-third of normal. In view of expiring contracts and the fact that but few new agreements have been made, production is expected to be smaller during the next few weeks.

NORTHEASTERN KENTUCKY

A slight increase in production was not indicative of any permanent market improvement. There was an output of 21 per cent as compared with only 13 per cent during the preceding week. Demand was a trifle firmer for slack but only because such grade was hard to obtain. The contract market is still displaying a sluggish condition.

VIRGINIA

Production figures remained virtually unchanged, or about 50 per cent of capacity, although cut down somewhat because of the expiration of contracts. Some established connections continue to take coal and it is believed that with a growing demand in Southern markets not only would current expirations be offset by new business but that a better condition might soon be expected.

LOW-VOLATILE FIELDS

Production Low, with Holidays and Poor Markets—Somewhat Better Tide Demand Helps Offset Contract Expirations.

NEW RIVER AND THE GULF

Although the close of the coal year brought the termination of a number of contracts, the slight slump in production in the New River region during the week ended April 2 was due to a general observance of the anniversary

of the establishment of the eight-hour day, rather than to any other cause. Conditions may be termed as slightly improved, as vessels were taking bunker coal for round trips. Any stiffening of Tidewater demand has so far failed to raise prices appreciably although there is no doubt that the market is somewhat firmer.

Winding Gulf production remained at about 30 per cent. Just as there was no spot business in sight so also were contract negotiations lagging, not only for commercial coal but also for railroad fuel.

POCAHONTAS AND TUG RIVER

Dullness was decidedly marked in the Pocahontas region at the beginning of the new coal year with the output not reaching more than 40 per cent of capacity. However, it is hoped that expiration of contracts may be temporarily offset by new business at Tidewater in view of the British trouble. The contract market is extremely sluggish. So far no agreements have been made on the N. & W.

Tug River mines were producing contract coal only and as few agreements have been closed, operations were somewhat reduced as the coal year came to an end. New contracts have not been placed for those expiring but indications are not lacking to show that a revival of the spot demand might soon compensate for the loss of such contracts.

West

UTAH

Mine Operations Further Curtailed—All Demands Are Weak.

Production rate is unchanged and does not exceed 45 per cent of capacity. The outlook is not improved by the closing down last week of the mines of the Utah Copper Co. at Bingham, as the smelters will need even less coal than they have been using. According to Coal Inspector Crawford of the Utah State Industrial Commission, who has just returned from an inspection trip, there is only one mine actually closed in the Utah fields.

PROPOSALS FOR FURNISHING COAL STATE OF NEW YORK

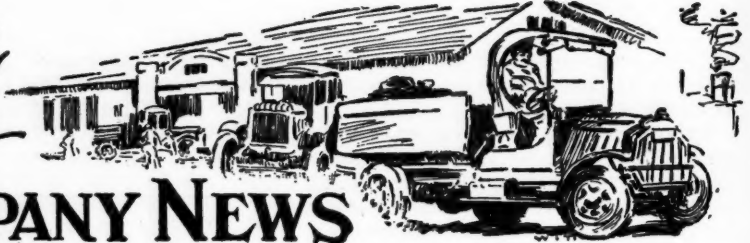
Albany, N. Y.

Sealed separate proposals will be received until 12 o'clock, noon, Wednesday, April 27, 1921, and opened at that hour at each of the institutions named, for supplying Anthracite and Bituminous Coals as shown in the proposal forms, for a period from that date to March 31, 1922.

Proposals should be addressed to the following officers at the institutions named: Lewis E. Lawes, Agent & Warden, Sing Sing Prison, Ossining, N. Y.; E. S. Jennings, Agent & Warden, Auburn Prison, Auburn, N. Y.; Harry M. Kaiser, Agent & Warden, Clinton Prison, Dannemora, N. Y.; William Hunt, Agent & Warden, Great Meadow Prison, Comstock, N. Y.; Raymond F. C. Kiehl, Medical Superintendent, Matteawan State Hospital, Beacon, N. Y.; John R. Ross, Medical Superintendent, Dannemora State Hospital, Dannemora, N. Y. Proposal forms giving specifications may be obtained by addressing the Agent and Warden or Medical Superintendent of the institution for which it is desired to submit proposal. Albany, N. Y., April 11, 1921.



MINE And COMPANY NEWS



ALASKA

Thirty tons of bituminous coal, the first shipment from the **Evans Jones Co.**'s mines in the Matanuska district, recently arrived in Anchorage. The company expects to make regular shipments in the future.

The **Alaska Coal & Coke Co.** has secured a lease on Blocks 26 to 31 in the Bering River coal field, according to information received at Juneau. The land covered by the lease comprises approximately 2,000 acres and embraces a portion of the famous Cunningham group of claims which figured prominently in the Ballinger-Pinchot controversy and finally resulted in the withdrawal of Alaskan coal and oil lands from entry. The group of claims leased is situated about one mile east of the Falcon Joslin leasehold and lies north of Kushtaka Lake and east of the glacier of the same name. The company is a Washington corporation with offices in Seattle.

COLORADO

At the stockholders' annual meeting of the **Colorado Fuel & Iron Co.** Raymond Blaine Fosdick, of Washington, was named as a director to succeed the late Mr. McKennan. The other directors re-elected are: Starr J. Murphy, J. H. McClement, David H. Taylor, Willard P. Ward, M. D. Thatcher, J. F. Welborn, George B. Berger, S. G. Pierson, Albert A. Reed, John C. Mitchell and Fred Farrar. The first five named are from New York City. Mr. Thatcher is from Pueblo and the other directors are from Denver. The directors elected the following officers: J. F. Welborn, president; Starr J. Murphy, New York, vice-president; Fred Farrar, Denver, general counsel and executive assistant to the president; Wendell Stephens, Denver attorney; S. G. Pierson, treasurer; A. H. Lichty, Denver, in charge of industrial relations; E. S. Cowdrick, Denver, assistant to vice-president; E. H. Weitzel, Pueblo, general manager; F. E. Parks, Pueblo, manager Minnequa Works; D. A. Stout, Pueblo, manager fuel department; T. Aurelius, Denver, manager sales department; A. W. Sampson, general auditor.

ILLINOIS

After two weeks of hard labor in the entries of the **Kathleen mine** at Dowell six rescue teams finally reached the point where the seven victims of the fire during the latter part of February had fallen in their last attempt to save themselves. Officials express the opinion that the plant will resume operation at an early date, after having a fight with a mine fire such as has never before been recorded.

A special meeting of the stockholders of the **Franklin County Mining Co.** has been called for the purpose of considering the advisability of buying 5,000 acres of high-grade coal land lying in Cave township in Franklin County. The coal is owned by Robert R. Ward and W. W. McCreery, of Benton, and is one of the largest tracts of coal land in that county now owned by private parties.

A big deal was completed recently when the **Lake Export Coal Corporation** signed papers with A. F. Jakoubek, wealthy St. Louis coal operator, giving to the Huntington, W. Va., firm a big place in the Illinois coal industry. In the deal, which involves more than \$1,500,000 in coal output to be handled by the **Lecco Co.**, is included the noted "Star Mine," fifteen miles from St. Louis, at Freeburg. Two other mines at West Belleville, the West Belleville mine and the Highland mine, also will be Lecco operations under the deal.

The **Chicago, Wilmington & Franklin Coal Co.**, one of the largest operators in the Franklin County field, will at once begin the work of sinking a new shaft between Benton and West Frankfort. According to the plans as given out, this will be the biggest and most modern colliery ever constructed, and will have an hourly capacity of one thousand tons. The com-

pany now operates three mines in Franklin County and two in Williamson County.

The **Pilot Knob Ore Co.** has disposed of its coal properties, formerly held by the **Big Muddy Coal & Iron Co.**, to the **Consolidated Coal Co.**, of St. Louis.

INDIANA

Fire destroyed the tippie of the **Black Diamond Coal Co.** at Boonville, March 28, causing a loss estimated at \$100,000, partially covered by insurance. The origin of the fire is unknown.

Charles Waldron, who with Jesse E. Eschbach and E. D. Farmer, administered the **State special coal and food act**, has filed a last report of their work, showing total receipts of \$113,350.55, of which the administration of the law took \$39,924.70, so that a net balance of \$73,425.85 remains in the state treasury. The law has expired. The tax of 1c. on each ton of coal mined raised \$91,535.25; the \$5 license fee from 1,972 retailers produced \$9,860; the \$10 license fee from wholesalers produced \$2,030 and the \$25 license fee from 397 operators produced \$9,925. Further collection of fees stopped because of litigation. All litigation arising out of the law enforcement has been or is to be dismissed, it was said.

KENTUCKY

The **Trace Fork Mining Co.** will build a commissary, coal tippie, etc., at Tesley. L. Ryley is president of the company.

The **Elk Horn Creek Coal Co.** is to contract for the immediate erection of twelve miners' houses at Pikeville.

The **Big Four Coal Co.** is planning to build twelve miners' houses at Sand Lick.

The **Amburgy Coal Co.**, Dalna, will build a coal tippie, as well as ten miners' houses and a church.

Quite a number of mines are seizing the opportunity of slack operating time to make extensive improvements to their properties, in the way of new tipples, machinery, etc. The **New Straight Creek Mining Co.**, located on Straight Creek, has completed a new tippie, tramroad, etc., and has also installed new Goodman low-vein cutting machines. The **Federal Coal Co.** has rebuilt its tippie at the Glendon mine on Straight Creek, and has also installed some new Sullivan cutting machines at their Cary mine. The **Vinson-Harlan Co.** has about completed arrangements at its new mine on Straight Creek, and will be ready for operation in the near future. The **Liberty Coal & Coke Co.** is building a new and modern tippie at the Easley mine, with all machinery being furnished by the Webster Co.

OHIO

The **Montour & Lake Erie Coal Co.** has been incorporated with a capital of \$50,000 to mine and ship coal. The incorporators are J. H. Price, W. C. Graves, C. S. Turner, W. C. McCullough and R. E. Turner.

The authorized capital of the **Bremer Coal Co.** has been increased from \$25,000 to \$100,000 by papers recently filed with the Secretary of State.

The **Central Hoeking Coal Co.** of Columbus is opening a new mine in No. 7 seam at Longstreth on the H. V. Ry. in Athens County. The company controls 600 acres at that place and is busy driving an entry. A small switch is being constructed to connect with the railroad. It is expected to be loading coal about May 1 if not earlier.

Now that the gas rate in Columbus has been increased from 33½ to 50 per cent coal men are looking forward to a number of householders changing over from natural gas to coal as a fuel. Coal men, especially the retailers, are urging their customers to lay in their supply early as they predict a period of stress later on unless something is done now toward laying in the supply for the coming winter.

The **Great Lakes Coal Mining Co.**, in eastern Ohio, is running full time. All production is being shipped to the company's docks at Huron and Toledo. The company produces about 6,500 tons daily.

The **Commercial Coal & Coke Co.**, Cleveland, capital \$25,000, has recently been incorporated by Messrs. O. Ruby and F. L. Leckie.

PENNSYLVANIA

A deal has been closed at Ebensburg, Cambria County, whereby the **Caldwell Mine No. 3** located at Hastings passed into the hands of **L. W. Maurer, F. R. Maurer and Andrew Rhody**, all of Patton. The property was purchased from the **Caldwell Coal Co.**, represented by Campbell, Peacock & Kerr of Philadelphia. The price paid was in the neighborhood of \$85,000. A company to be known as the **Miller Run Coal Mining Co.**, will be incorporated to operate the new holdings.

Work in the Connellsville coke region remains about the same. The coal and coke plant of the **Briar Hill Steel Co.**, at Briar Hill, has closed down for the first time since the plant was started 18 or 20 years ago. The **Crystal plant** of the **Hillman Coal & Coke Co.**, which has for several weeks past been working two days per week, is now down. The **Westmoreland-Fayette Coal & Coke Co.** has started up its plant at Cheat Haven, which has been idle since their tippie and bin were destroyed last fall by a B. & O. train.

Six of the leading coal companies of central Pennsylvania, now occupying quarters in the First National Bank Building, Johnstown, will occupy in the near future new quarters, the first exclusive coal office building in Johnstown. The building was purchased by the six companies and remodeled to suit their needs. The companies occupying the new building are the **Wilbur Coal Co.**, **Jassahill Coal Co.**, **Somer-set Coal Co.**, **Telford Coal Co.**, **Knickerbocker Smokeless Coal Co.**, and the **Knickerbocker Fuel Co.**

Stockholders of the **Pittsburgh Coal Co.** have voted for a reduction in the capital stock of from \$80,000,000 to \$75,000,000 and to retire and cancel \$5,000,000 of preferred stock in the treasury. This will leave a total preferred stock outstanding of \$35,000,000. R. B. Mellon has been elected a director in the place of A. W. Mellon. The other retiring directors were re-elected.

Four mining companies have consolidated, with a capital of \$75,000, into the **Rice Fuel Co.** The merger combines companies in Fayette and Westmoreland counties. The incorporators are W. E. Rice, W. P. Stillwagon, J. E. Wallace and R. D. Klinedinst. Through the merger the **Donald Coal & Coke Co.**, of Cheat Haven, the **Robinson Coal Co.**, the **Northern Connellsville Coke Co.**, and the **Irwin Valley Gas Coal & Mining Co.** are consolidated.

An exchange of property has been made between the **Donner interests** and the **Warwick Coal Co.**, of Pittsburgh, the latter company having extensive holdings at Gray's Landing. By one deed **William H. Donner**, of Buffalo, transfers to the **Donner Coal Land Co.**, of Pittsburgh, eleven tracts, located in Monongahela township, containing 500 acres and two tracts of surface containing 16 acres. By another deed a tract of 102 acres is transferred to the **Warwick Coal Co.** and still another deed shows a transfer by the **Warwick Coal Co.** to the **Donner Coal Land Co.** of a tract in the same township also containing 102 acres.

VIRGINIA

Bids opened by the **Housing Corporation** for 12,000 tons of coal for use on the **Norfolk-Portsmouth ferries** ranged \$3.50@ \$4.25 per ton. Four bids at \$3.50, one at \$3.75, one at \$3.95, twelve at \$4 and one at \$4.25 were received. Contract has not yet been awarded.

WEST VIRGINIA

The American Gas & Electric Co. has completed work on the opening of a new coal mine on the Wheeling-Steubenville line. The company is erecting several large buildings at this place.

Operations on a fairly large scale are presaged in Logan County by the organization of the Logan Black Band Coal Co. The new company is capitalized at \$50,000. Among those actively interested are: E. D. Wilson, Midkiff; E. J. Elkins, A. F. Black, C. C. May, all of Hamlin; J. C. Messinger, of Sheridan.

The Smith Big Vein Coal Co., of Meyersdale, has been organized as a West Virginia concern, its capitalization being fixed at \$75,000. Closely identified with the new concern are: A. J. Smith, James B. Hostetler, of Meyersdale; Hugh G. Smith, Clarksburg; R. Marsh Dean, Elk Garden, W. Va.

Marshall County mining operations will be undertaken by the Cameron Mining & Development Co., which has a capitalization of \$1,250,000. Offices of the company for the time being will be at Cameron. Leading figures in the new concern are: George T. Myers, H. L. Chambers, George W. McCracken, J. L. Earnest, and James F. Donahue, all of Cameron.

A new mine is to be opened by the Central Pocahontas Coal Co. on Brown's Creek. W. C. Atwater & Co. has acquired an interest in this company.

Plans are being drawn by the Boone County Coal Corporation for the construction of a new tippie at a large expenditure at its plant at Monclo, but such a structure will not be erected until market conditions are somewhat improved. At such a time as the new tippie is built it will have a capacity of 2,000 tons a day, all coal from mines 2 and 3 being dumped over this tippie.

Boone County coal territory will be developed by the newly organized Coal River Collieries Co., with headquarters at Huntington, this being a million-dollar concern in which the following people are interested: Harry Leaberry, Henry L. Porter, Harry D. Davis, of Huntington; J. T. Keister, Peru, Ind.; C. E. Glass, Hinton, W. Va.

J. T. Neylon and H. C. Vanover, of Mullins, have returned from a business trip to Ashland, Ky., having leased a valuable tract of coal land in northeast Kentucky on which they expect to begin development work in the near future.

The East Wheeling Coal Co. has secured additional coal land in Ohio County, having just purchased forty acres from D. G. Frazier and wife in Liberty district, this acreage being on McGraw's Run. The consideration was in the neighborhood of \$4,000.

The purchase price paid for 400 acres of coal land just acquired by the Cambria Coal Co. on Ten-Mile Creek in Harrison County was \$60,000. This coal is in the Pittsburgh seam. It seems probable that the company will build a short railroad to the B. & O. right of egress to the B. & O. having been reserved in the purchase of the property.

The New River Co. has been granted permission through a certificate issued by the Secretary of State to increase its land holdings in Fayette and Raleigh Counties from 23,000 to 28,000 acres.

The Middle Fork Mining Co. is one of the largest companies recently formed in southern West Virginia, having a capitalization of \$500,000, some well-known coal men of Huntington being interested in this concern, which will operate on Middle Fork. Among those largely interested are: A. J. Dalton, E. L. Hogsett, J. F. Grossenbach, C. B. Brown and F. W. Dulaney, all of Huntington.

Organization of the Dodge Coal Co., of Clarksburg, with a capitalization of \$50,000 presages early development of coal land in the Harrison County field. Among those most largely interested in this corporation are: Lloyd W. Garrett, F. K. McClure, Clara E. McClure, J. W. Barnard, and D. Bruce Mason, all of Clarksburg.

In preparation for an early resumption of business several companies in the Monongalia County region are endeavoring to get their plants in the best shape possible while demand is such that the time of employees may be utilized in making repairs. The New England Fuel & Transportation Co., for instance, is understood to be ready to start work on 700 new houses for its plant at Lowesville on the Monongahela Ry., near Morgantown.

The Pulaski Iron Co., which Isaac T. Mann of Bramwell acquired some time ago, is not only enlarging the number of houses for miners at its Eckman plant during the lull in the coal business, but it is also installing a large sub-station and power plant at Eckman so that when there is a revival in demand the company will be fully prepared to produce a large tonnage.

As showing the faith the Davis Coal & Coke Co. has in the future of the coal business during the present year the company has gone to large expense in constructing a steel head-frame at its plant at Pierce, in place of a wooden head-frame. The company is also having constructed a large steel storage bin with a concrete lining, with capacity of 600 tons. The company has been using the same apparatus at its Kempton plant for the last five years and in time expects to equip all its plants in this manner.

Operations on a very large scale will be conducted by the Huntington Coal & Mining Co., which will undertake the develop-

ment of coal property in the vicinity of Belle in the Kanawha field, this concern being capitalized at \$150,000.

WYOMING

The Union Central Coal Co. has been incorporated with a capital stock of \$100,000, the operations of the company being principally in Laramie and Carbon counties. Active in the new organization are W. C. Kinkead, H. B. Henderson, Jr., and F. D. McMillen.

At the mines of the Hotchkiss Coal Co. just beyond Dietz work has commenced in development of a lower vein of coal than has yet been marketed, known as the Monarch vein. Another crew has been put to work on Salter Creek about a mile and a quarter above Alger on the Carney vein. The president announces the intention to put in a modern tippie at that point. A spur track of the Burlington will be built to the mine.

BRITISH COLUMBIA

Coal prices can be reduced by over two dollars a ton if consumers will take mine run and accept delivery in loose form instead of in sacks. There are eight coal dealers in Victoria to a population of less than 50,000 and there should be two. The above are some of the statements made at the coal inquiry at Victoria recently before Commissioner Alexander Henderson by J. M. Savage, general manager of the Canadian Collieries (Dunsmuir), Limited.

Coal areas of the Hazelton district may be extensively developed in the near future. The ever-increasing price of fuel oil is causing renewed interest in all new and promising coal fields. The Telkwa River, Morice River, Zymoetz River, Peave River, and Groundhog fields have all attracted attention and but for the admitted transportation difficulties they might now be in the production class. Some coal was mined in 1920 by the Telkwa Collieries and nearby a new seam is being opened up. The property is now being worked by J. M. Gillespie, who also has a lease on the Aveling coal property, situated six miles up the Telkwa River from the town of Telkwa and about two miles distant from the property of Telkwa Collieries.

NOVA SCOTIA

That at the present time the Dominion Coal Co. can only market 100,000 tons per month, or about one-third of normal capacity, was brought out in a recent statement made by assistant general manager H. J. McCann. There is a possibility that the company will not close any more of its collieries, but will operate at reduced capacity in order to give all workmen their share of employment.

Traffic News

The Beaumont (Tex.) Chamber of Commerce has complained to the I. C. C. against unreasonable rates on coke from Beaumont to Lake Charles, La.

The Supreme Court has refused to review the case of the Phoenix Portland Cement Co., of Nazareth, Pa., which appealed from an adverse decision in its suit against the B. & O. arising out of the seizure of 44 carloads of fuel. The Pennsylvania court decreed that a railroad having a contract with coal companies for fuel may commandeer coal in transit for its own use.

The Wayne Coal Co. complains against discriminatory ratings in connection with the distribution of coal cars at its mines on the Pittsburgh & West Virginia R.R., which are alleged to be in favor of the Pittsburgh Terminal Railroad & Coal Co.

In the complaint of the Oxford Paper Co., an I. C. C. examiner recommends that rates on bituminous and small sizes of anthracite from points in Pennsylvania and from Fairmont, W. Va., to Rumford and South Brewer, Maine, between June 25, 1918, and various dates in August and September 1918 were unreasonable.

The Railroad and Utilities Commission has handed down an order in the case of the city of Knoxville against the Southern Ry., in which it grants a substantial decrease in the rate on coal from Coal Creek, La Follette and Jellico to Knoxville. The commission also differentiated on run of mine, which heretofore had been classed the same as nut and placed it in the same class as steam coal.

In the case of the Robinson Clay Product Co., the I. C. C. decides that the rates on bituminous coal from Sugar Creek, Ohio, to Parral, Ohio, during Federal control were not unreasonable.

The commission has further suspended until April 27 proposed increase of 20c. per ton on coal from points on the Cumberland railroad to points on the L. & N. in Alabama, Georgia, Illinois, Indiana, Kentucky, North Carolina, Ohio, Tennessee, and Virginia and on connecting lines in Kentucky and Tennessee.

The National Supply Co., of Lincoln, Neb., in a complaint to the commission, attacks the combination rate of \$1.17 on shipments of lump coal from West Clinton, Ind., to Ottumwa, Iowa, and other points, and asks for rates not exceeding those in effect via Peoria.

The Refinite Co., of Omaha, Neb., in a complaint attacks as unreasonable the rates on coal from points in Wyoming to Ardmore, S. D.

The commission has decided that rates on coal from the Castle Gate group of mines in Utah are unreasonable, and provides that the rates shall equal those from the mines of the United States Fuel Co., at Panther, Hiawatha, East Hiawatha and Mohrland, Utah.

The El Paso & Southwestern Ry. Co. has recently announced an increase of ten per cent in freight rates on coal from northern Mexico to El Paso.

In the complaint of the Hydraulic Press Brick Co., an I. C. C. examiner recommends that the rates of 60 and 70c. per net ton charged for run of mine coal from the Brazil, Ind., district to complainant's plant at Brazil from June 25, 1918 to Feb. 29, 1920, were unreasonable because they exceeded 50c.

In the complaint of the Tuffli Bros. Pig Iron & Coke Co., the commission's examiner recommends that the charge on a carload of smithing coal from Douglas, W. Va., to Chicago, reconsigned to Oakdale, Cal., and subsequently to Los Angeles, was legally applicable.

In the complaint of J. J. Steeley an examiner recommends that the rate on lignite coal from Stanton, N. D., to Hecla, S. D., was unreasonable.

The I. C. C. has discontinued its proceeding concerning the lawfulness of rates, charges, regulations and practices covering storage charges on coal and coke, the carriers having canceled the schedules under suspension.

The I. C. C. has decided that the practices of the Director General of Railroads during the period from July 1, 1919, to March 1, 1920, in the distribution of coal cars to mines on the Monongahela Ry. and the Morgantown & Wheeling Ry. were unduly prejudicial to operators of coal mines on those roads. The case is held open for further hearing as to the extent of damages if any suffered by members of the Northern West Virginia Coal Operators' Association as the result of the undue prejudice.

The Navy Department has filed a complaint with the commission against the B. & O. attacking excessive rates on coal and other commodities from Lake Denmark, N. J., to various points in the United States and Canada and from these points to Lake Denmark. A refund of \$110,000 is requested.

The Far West Clay Co., of Tacoma, Wash., complains against unreasonable rates on coal from the Wilkeson group of mines in Washington and from Foran to Clay City, Wash.

Industrial News

New York, N. Y.—The Tuttle Corporation has moved its offices from the fifth to the third floor of the Mills Bldg., 15 Broad St. Telephone numbers will remain unchanged—Hanover 1497-8-9. **Commander Carlo Pfister**, formerly Italian naval officer, will represent the corporation in Europe, with headquarters in Genoa, Italy.

Johnstown, Pa.—The Peerless Coal Co. has opened an office in the Dibert Building, removing to this city from Windber.

Cleveland, Ohio—E. F. Pegg has opened an office at 827 Engineers Building for the purpose of handling contractors' equipment of all kinds.

Cleveland, Ohio—Lawrence P. Crecelius and Victor B. Phillips announce the organization of the firm of Crecelius & Phillips, consulting, constructing and operating engineers. At the present time this firm is undertaking extensive work for coal mining interests in Ohio, Pennsylvania and West Virginia.

Pittsburgh, Pa.—The Carnegie Institute of Technology will conduct a four weeks' course preparing miners for the examinations of the State Department of Mines for positions as fire bosses and mine foremen. The course starts June 27, 1921; mornings at 9 a.m. at the Institute, afternoons at 1:30 p.m. at the United States Bureau of Mines. Address, Supervisor, Co-operative Dept. of Mining Engineering, Carnegie Institute of Technology, Pittsburgh, Pa.

Personals

D. A. Stout, promoted from the position of assistant manager to manager of the fuel department of the Colorado Fuel & Iron Co., is an Eastern man. Coming to Colorado in 1908, he worked at various mines of the company. In September, 1918, he was appointed chief engineer of the fuel department and less than a year later became assistant manager, retaining the duties of chief engineer.



D. A. STOUT
Manager, Fuel Department Colorado
Fuel & Iron Co.

J. B. Routten, formerly general manager for the Inglesby-Patterson Co., of Norfolk, has become general manager of the C. & O. Coal & Coke Co.

E. K. Downey, general manager of Dexter & Carpenter Co., New York, was in Norfolk recently, making an inspection of coal piers and calling on the trade. He also visited the company's J. B. B. mines, at Twin Branch, W. Va.

A. W. Giles of the University of Virginia recently conferred with Messrs. Campbell and Eby of the Geological Survey, regarding Virginia co-operative coal work.

H. I. Smith of the Bureau of Mines has been co-operating with the land classification board of the Survey in consideration

of the establishment of coal land leasing blocks in the Western States, especially Utah.

T. J. Robson, general sales manager of the Wyatt Coal Sales Co., and of other companies in the Kanawha, Logan, and New River regions, was a visitor in New York and other Eastern markets recently.

William B. Jess, well known in Illinois and president of the Springfield District Coal Mining Co., was recently elected a member of the Board of Directors of the Springfield Gas & Electric Co.

V. H. Halstead, manager of the coal department of Halser & Co., New York, was in Norfolk recently, visiting the local offices of the company.

J. W. Porter, who for a long number of years has been manager of sales for the Alabama Co., one of the leading pig iron manufacturers and coal and coke producers of the Birmingham district, has been promoted to the vice-presidency of the company. Mr. Porter has shown marked ability in the handling of the sales department and his elevation to the vice-presidency of the corporation is well merited.

Lucius T. Koons, president of the Majestic Coal Co., New York City, who spent part of the winter in Florida, has returned to his office.

Effective April 1 the office of fuel agent of the Frisco System at St. Louis was abolished and **B. T. Wood**, vice-president and chief purchasing officer, took charge. **W. H. Burke**, who has been fuel agent, will continue in the services of the company as assistant to Mr. Wood.

A visitor in Charleston recently was **M. D. Reed**, of Clay, W. Va., who is the president of the Carver's Fork Coal Co.

J. M. Pack, of Bluefield, identified with the Pocahontas coal field, was a visitor at Charleston, W. Va., during the last week of March.

C. M. Gates, who has a large operation in the Mingo field, spent a few days in Charleston on business late in March.

After spending a part of the winter in Florida, **J. H. Murray**, president of the Clear Creek Coal Co., has returned to his office at Huntington.

W. F. Coale, of New York, president of Coale & Co., recently spent about a week in the New River, Winding Gulf and Kanawha fields. Mr. Coale is largely interested in the recently organized New River, Raleigh & Pocahontas Coal Co., capitalized at \$7,500,000. The Huntington office of Coale & Co. has been closed for the time being.

A recent visitor in the Logan region was **James H. Clagett**, field representative of the Solvay interests with headquarters at Ashland, Ky.

J. L. Brooks has severed his connection with the General Coal Co. to engage in business for himself, his office being in Huntington, W. Va.

A visitor in Huntington during the latter part of March was **J. H. Stewart** of the Kentucky Gem Block Coal Co., who has headquarters at Ashland, Ky.

The appointment of **Harry S. Jones** as sales manager of the Wholesale Coal Co. at Covington, Ky., has been announced.

Under the terms of a co-operative agreement effected between the National Safety Council and the United States Bureau of Mines, **C. L. Colburn**, who has served as Assistant Chief Mining Engineer of the Bureau of Mines for the last two years, has been given the duty of visiting the various coal and metal mines of the country for the purpose of acquainting the operating companies with the scope of the technical safety service available to them through this co-operation. Mr. Colburn's work will be under the general direction of **B. F. Tillson**, chairman of the Mining Section of the National Safety Council, who also acts as Consulting Mining Engineer of the Bureau of Mines.

A recent visitor in the Pittsburgh market was **J. E. Gaskill**, of Fairmont, president of the Southern Coal Corporation.

C. V. Critchfield, of Mt. Vernon, Ohio, vice-president of the Domestic Coke Corporation, was a visitor in the Fairmont region lately.

Fred W. Schoew, of Huntington, has been appointed secretary, treasurer and general manager of the Noew Howard Coal Co., at Matewan, general offices being at Huntington.

Voris Hall, who makes his headquarters at Dayton, Ohio, and who is connected with the Royal White Ash Coal Co., operating on Coal River at Alcol, W. Va., was a recent visitor in Huntington.

J. W. Montgomery, of Ashland, Ky., head of the Rich Block Coal Co., operating on Coal River in the Kanawha field, and president of the Platts Fork Mining Co., in Kentucky, was a recent visitor in the Huntington market.

Guy D. Goff, of West Virginia and Wisconsin, formerly of the Shipping Board, has been appointed Assistant Attorney-General in the Department of Justice.

Harry Boyd has resigned as superintendent of the Edenborn plant of the H. C. Frick Coke Co. in order to look after his personal business interests.

Obituary

Word has been received of the sudden death of **D. A. Wood**, who lived in Owensboro, Ky., for about twenty-four years and was engaged in the coal business.

Lewis Burnett Blair, aged 51 years, a member of the firm of Blair Brothers Coal Co. of Tyronne, Pa., died at his home recently, death being due to Bright's disease. He was a lifelong resident of Tyronne and the son of S. S. Blair, a pioneer resident.

Recent Patents

Crusher, Carl Wendell, Rockville Center, N. Y., 1,366,985. Feb. 1, 1921. Filed Aug. 1, 1919. Serial No. 314,732.

Coal Car, George Kushner, Avella, Pa., 1,367,271. Feb. 1, 1921. Filed July 10, 1920. Serial No. 395,249.

Car, George M. Fite, Newhall, West Va., 1,367,365. Feb. 1, 1921. Filed Feb. 14, 1919. Serial No. 277,004.

Automatic Coupling for Mine Cars, C. G. Humphrey, Wilcoe, West Va., 1,368,153. Feb. 8, 1921. Filed June 8, 1920. Serial No. 387,394.

Coming Meetings

Indiana Retail Coal Merchants Association will hold its convention at Indianapolis, Ind., May 4, 5 and 6. Secretary, R. R. Yeagley, Indianapolis, Ind.

American Society of Civil Engineers will meet at Houston, Tex., on April 27 to 30. Acting Secretary, H. S. Crocker, 33 West 39th St., New York City.

American Institute of Chemical Engineers will hold its spring meeting June 20 to 24 at Detroit, Mich. Secretary, Dr. J. C. Olson, Polytechnic Institute, Brooklyn, N. Y.

The American Wholesale Coal Association will hold its annual convention in Washington, D. C., June 7 and 8. Secretary, G. H. Cushing, Woodward Bldg., Washington, D. C.

The International Railway Fuel Association will hold its thirteenth annual meeting at the Hotel Sherman, Chicago, Ill., May 24, 25 and 26. Secretary, J. G. Crawford, Chicago, Ill.

The National Coal Association will hold its next annual convention at the Waldorf-Astoria Hotel, New York City, May 19 and 20. White Sulphur Springs hotel reservations have been cancelled. Secretary, W. B. Reed, Commercial National Bank Bldg., Washington, D. C.

The American Society of Mechanical Engineers will hold its spring meeting May 23, 24, 25 and 26 at the Congress Hotel, Chicago, Ill. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

National Chamber of Commerce will hold its ninth annual meeting at Atlantic City, N. J., April 27, 28 and 29.

National Retail Coal Merchants Association will hold its annual meeting May 12, 13 and 14 at the Jefferson Hotel, Richmond, Va. Special rates on all railroads. Secretary, E. G. Gordon, Philadelphia, Pa.

The National Foreign Trade Council will hold its eighth annual convention May 4, 5, 6 and 7 at Cleveland, Ohio. Secretary, J. G. Hammond, 409 Park Bldg., Cleveland, Ohio.

Illinois Mining Institute will hold its spring outing the latter part of May on the Mississippi and Illinois Rivers, the boat leaving St. Louis for Peoria on May 26 and returning on May 28. Secretary, Martin Bolt, Springfield, Ill.

The American Mining Congress and National Exposition of Mines and Mining Equipment. The 24th annual convention on Oct. 17 to 22 at the Coliseum, Chicago, Ill. Assistant secretary, John T. Burns, Congress Hotel, Chicago, Ill.